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REVIEWS OF NEW BOOKS.

The Seasons. By James Thomson. With engraved Illustrations from designs drawn on wood [by eminent Artists], and with the Life of the Author by Patrick Murdoch, D.D. Edited by Bolton Corney, Esq. London, Longman and Co.

To embellish a poem of such varied beauties as Thomson's *Seasons*, with a like abundance of the beauties of Art, was a design worthy of the taste of our day for highly illustrated editions of all works above the cheap penny and twopenny line. The Painter of nature has offered every character of subject to be made palpable to vision by the Artist; and in justice to the ingenious individuals to whom the trust has been confided in the present instance, we must say that nearly the whole of their seventy-seven contributions to adorn the text are sweetly appropriate and replete with a fellow-feeling. It would be invidious to particularise the most successful of these productions, very different in theme, but very similar in merit. Rural scenery of course predominates; but there are also classic and imaginative inventions, familiar life, sporting, comic situations, and other engravings, which are well worthy of the combined talent of the eleven members of the Etching Club* (fortunately used to co-operation) who have executed these charming compositions, which as they chiefly occupy the page, surrounding the text at top and bottom and along the margin, afford the greater scope for the display of the genius employed upon them. The volume is indeed a delightful one, and for a gift-book we should say unsurpassed in fitness by any in our language. The rare union of poetry so congenial to the mind of youth, and of ornament† so pleasing to the lovely and accomplished of the fair sex, and of freshness and grace so welcome to all, must recommend this edition of *The Seasons* to a very wide circle of readers and lovers of the fine arts.

Having thus briefly disposed of one branch of our review (which we regret we cannot aid by examples), we have now to speak of the editorial services of Mr. Bolton Corney. They do credit to his care and research, as the annotations on the *Life* fully prove. But we owe him still greater praise for his restoration of the text of 1746, the edition which received the final revision of the author, previous to his death in 1748. We presume that it was to avoid, as it were, overlaying the poem with too much of critical and other matter, that Mr. Corney has not gone at length into the variations between this copy and the subsequent editions of 1762, 1768, and to the present time, mutilated and defaced by Lord Lyttleton and Dr. Murdoch, and pointed out the posthumous injuries of these very sensitive patrons and friends. The omissions, and the parallel passages as corrected by them, are of deep literary interest. The same reason, we may presume, led to the non-appearance of an anecdotical and unfinished Memoir of the poet, gleaned from early and local sources by an individual acknowledged in the editor's first foot-note (p. ix), whose pardonable partiality for the *Literary Gazette*, perhaps?, has permitted us the use of that paper for any reference we may think judicious in this notice, and to relieve the dryness of mere biographical notes, questions of dates, and points of criticism.

In following Murdoch's life, Mr. Corney adopts his birth-day of Thomson, the 11th of September, 1700; whereas other biographers prefer the 7th. It is a difference of little consequence; but the Memoir to which we have alluded says,—

"To ascertain the exact day, we have referred to the register or sessions-book; but that oracle is silent on the fact. We are inclined, however, to adopt the 7th, in consequence of finding the following entry:—'1700. Mr. Thomas Thomson's son James baptised, September 15th day.' Now, as in Scotland it is seldom or never the custom, unless a child be dangerously sickly (which in this case there is no cause to suspect), to baptise it so early as four days after its birth, the probability is all in favour of the earlier date."

Need we add that *we* agree with this opinion? On another question, however, Mr. Corney has staggered us. Murdoch writes,—"Mrs. Thomson, whose maiden name was *Trotter*, and who was co-heiress of a small estate," &c.; and our editor adds, "the edition of 1762 has *Hume*. In the revised edition of 1768 it is altered to *Trotter*; and I am enabled to confirm the propriety of this alteration, by a certified extract from the session-records of Ednam:—'1693, Oct. 6. The said day Mr. Thomas Thomson, minister of Ednam, and Beatrix Trotter, in the parish of Kelso, gave up their names for proclamation, in order to marriage.'" If this be indeed sooth, it certainly seems to set the dispute at rest; but previous investigation as to the name of the father of the co-heiress of the small estate appeared strongly to confirm the first impression that it was Hume. But the mistake might arise from the name of an earlier owner of Widehope or Wideopen (for such was the name of the property) being continued in the county cess or rate-books after it had passed into the possession of Trotter; or, indeed, Beatrix Trotter might have been an heiress to a person of the name of Hume. The unpublished Memoir tells us, that "Widehope, or Wideopen, is a small property in Roxburghshire, but lying amid lovely scenery at Grubet, on the Kale Water, which flows into the Teviot between Kelso and Jedburgh; and the house, we believe, is still in existence. It is remarkable how often we trace genius to the character and influence of the mother, rather than to the instruction and example of the father. A vast majority of great men seem to owe their eminence to nature acting through maternal love; nor was Thomson an exception to the rule. His mother appears to have been a woman of no common endowments. The warmth of her imagination and devotional feelings were scarcely inferior to those of her son; and it is more than probable, that to her immediate direction of his mind in infancy, succeeded by the cares of a pious father, he owed that species of training which imbued him so deeply with the beauties of creation and the sublimities of God's revealed word, apparent in the kindling glow of thought and oriental dignity of diction which pervade his poetry."

Thomson received his boyish education at Jedburgh; and we again quote our Memoir:—

"Though he drew his landscape scenes in general from nature's universal face, rather than from favourite localities, however

'Meet nurse for a poetic child,'

there can be no doubt that the sweet haunts of his morning of life,—the pensive, retired, and romantic retreats which abound about his childhood's home,—the solemn and sacred seat of learning in his 'school ile' in the venerable abbey—all tended to that inspiration which has made him an everlasting name. It is told by some of our precursors, that his teacher discovered in him nothing superior to the common lot of vulgar scholars; but one anecdote seems to refute this assertion. On an occasion when the Latin task (dry to a fancy like his) was indifferently performed, and called forth a sharp rebuke, he appeared to be sadly humbled; and some time after, as the master passed by, he caught him conning it over again, with the half-suppressed exclamation, as it rose from the heart of the delinquent, 'Confound the building of Babel!' Yet, though the poet sung of nature in all her widely spread beauty and magnificence, he did not at times disdain to descant gracefully on her humbler features, and celebrate the site of his nativity,—laved by lovely streams, studded with spots of sequestered peacefulness, and variegated by a few features of wild and imposing aspect. He invoked his muse to look down from Caledonia's awful grandeur upon

'Her fertile vales,
With many a cool translucent brimming flood
Wash'd lovely, from the Tweed, pure parent stream,
Whose pastoral banks first taught my Doric reed,
With sylvan Jed, thy tributary stream.'

And though the Tweed and the Jed are thus rendered classic by the poet, yet the romantic banks of the Ale have potent claims upon the interest of his admirers. Within the vale through which it takes its course, between Longnewton House and Ancrum Manse, resided one of his earliest friends, the Rev. John Cranston of Ancrum, the great confidant of Riccarton. This formed his favourite walk, and was worthy of his choice; and the impression of its natural attractions, hallowed by sincere affections, never faded from his memory. Witness one of his letters from London to Mr. Cranston:—'Now I imagine you seized with a fine romantic kind of melancholy at the fading of the year. Now I figure you wandering philosophical and pensive amidst the brown withered groves, while the leaves rustle under your feet, and the sun gives a farewell parting gleam, and the birds

'Stir the faint note, and but attempt to sing.'

Then again, when the heavens wear a more gloomy aspect, the winds whistle, and the waters spout, I see you in the well-known *Cleugh* [a name still given to the locality],

* J. Bell, C. W. Cope, T. Creswick, J. C. Hersley, J. P. Knight, A.R.A., R. Redgrave, A.R.A., Frank Stone, C. Stonhouse, Fred. Tayler, H. J. Townsend, and T. Webster, A.R.A. We miss one design which we wish had suggested itself on the line,

"In yonder grave a Druid lies."

† The plates are from copper blocks formed by the electrotype process.

beneath the solemn arch of tall thick embowering trees, listening to the amusing lull of the many steep moss-grown cascades—while deep divine Contemplation, the genius of the place, prompts each swelling awful thought. . . . There I walk in spirit, and disport in the beloved gloom.' Are not these the reflections of his own young habits and enjoyments? The spirit which conceived the noble address to Philosophic Melancholy, near the conclusion of Autumn, is here traced to its source, as it is embodied in the recollections of his early wanderings about the rural Cleugh. But there are incidents of a more sportive kind, the tradition of which attach to this spot. The caves with which the banks of the Ale abound could not but attract his attention; and one of them, near Ancrum Manse, is associated with his name in an amusing and characteristic manner. His friend the minister, a man of much firmer nerve than he, frequently retired for study to this cave, difficult as it was of ingress and egress, and the old inhabitants of the village knew it by the name of Cranston's Cave; not Thomson's, as has since been supposed. One evening, when the poet was his guest, he persuaded him to visit his rock-formed study; and, with much toil, managed to pilot him down the steep that led to it, and place him safe in his rustic chair within. But to extricate him was another task,—

'revocare gradum, superasque evadere ad auras,
Hoc opus, hic labor est,'—

and for a time utterly hopeless. No sooner did the eye of Thomson catch the high perpendicular cliff, and the turbulent stream below, overhung by the horrid ledge on which he gasped, than all his courage failed; and it ultimately required more aid than the entreaty and example of his reverend guide to extricate him from his sorrowful situation. And such was the shock his finely toned nerves received, that sleep was banished from his pillow, and fever was nearly the consequence. Whilst mentioning these local scenes, we may remark that many of the admirers of the Poet of the Seasons are not aware of the interesting fact that the summit of Ruberslaw, a bold conical hill which rises near the junction of the Rule and the Teviot, was the favourite spot which filled his mind with the finest images in his poem of 'Winter.' It commands a glorious prospect; and no persons, even of common sensibility, can lift their eyes to the sweeping majesty of the Liddersdale, Cheviot, or Lammermuir mountains, or drop them on the rich diversified beauty of the valleys below, without feeling that this was indeed a throne suited to the genius of the illustrious bard. And here beneath, at his feet, was his youthful sanctuary with his friend Riccarton, the first who discovered, cherished, and directed his noble powers. This estimable man (as we learn from Thomson's letter to Cranston) did much more than superintend his studies, and encourage his pursuits. He, too, was a poet, as well as a deep divine and well-informed philosopher. Often did they write verses and criticise them together; and doom to the flames, with extemporary requiems, such compositions as were considered unworthy of a better fate. On one memorable occasion the elder produced to the younger bard some lines on the subject of Winter—the first idea of that splendid song which achieved his future immortality. 'Nature (he writes, in the letter already alluded to) delights me in every form. I am now painting her in her most lugubrious dress for my own amusement—describing winter as it presents itself. Mr. Riccarton's poem on Winter, which I still have, first put the design into my head: in it are some masterly strokes that awakened me.' What comes of the statement in Warton's edition of Pope, that the idea of the 'Seasons' was taken from Pope's four Pastorals?"

Mr. Corney, however, says:—

"Murdoch omits to notice the employments of Thomson after the completion of *Alfred* in 1740; but he was never better employed. He was revising *The Seasons*—on whose origin and progress I shall now state some additional facts. As early as 1720 he felt the attractions of the theme—witness some lines, an epitome of the mysterious cycle, in his poem 'Of a Country Life:'—

'Through every season of the sliding year,
Unto the ravish'd sight new scenes appear.
In the sweet spring,' &c.

He was eminently fitted to the bold design, but chance may have led him to decide on its execution. 'Nature,' said he, 'delights me in every form:' such were his feelings while occupied in writing his *Winter;* and he added, in the confidence of friendship, a 'poem on winter first put the design into my head.' The poem seems to have perished; but the late Dr. Somerville of Jedburgh, who attained his ninetieth year, had heard part of it recited by the author—the Rev. Robert Riccaltoun. The above facts chiefly apply to *Winter;* we have other evidence on the origin of *The Seasons.* Thomson informed Collins that he took the first hint and idea of writing his *Seasons* from the titles to the four *Pastorals* of Pope. The *Pastorals,* which were published in 1709, are entitled Spring—Summer—Autumn—Winter; and in a preface thereto, published with his *Works* in 1717, the author remarks that 'the year has not that variety in it to furnish every month with a particular description, as it may every season.' There is a remarkable resemblance between the two writers in *Winter;* and it adds to the testimony of Collins, as reported by Dr. Warton:—

'Tis done, and nature's various charms decay.'
POPE.
'Tis done!—Dread Winter has subdu'd the year.'
THOMSON.

In the first edition of *Winter,* Thomson also sang of *fair Autumn.* In the second edition he earnestly pleaded in favour of descriptive poetry, and thus intimated his entire design:—'How gay looks the Spring! how glorious the Summer! how pleasing the Autumn! and how venerable the Winter!' This design was completed, as Murdoch observes, in 1730; but he should have added that a revised edition of the *Seasons* appeared in 1738; another edition, with considerable additions and improvements, in 1744; and another edition, with the final revision of the author, in 1746. The number of lines contained in the poem, at the above-mentioned epochs, shall now be stated in a tabular form; large figures denoting first editions:

A.D.	1726	1727	1728	1730	1738	1744	1746
Spring			**1082**	1087	1087	1173	1176
Summer		**1146**		1206	1206	1796	1805
Autumn				**1269**	1269	1375	1373
Winter	**405**			781	787	1069	1069
Hymn				**121**	121	118	118
Total				4464	4470	5531	5541

It thus appears that Thomson paid no serious attention to the poem in the interval 1730-8. He afterwards undertook to correct it; made considerable additions; and inscribed it to the Prince of Wales in 1744. He also re-edited the poem, with further additions, in 1746. * * *

"We have had no account of the minor poems of Thomson.—The *Edinburgh Miscellany,* 1720, sm. 8vo, contains three pieces which are ascribed to him—I believe correctly, viz. 1. 'Of a country Life;' 2. 'Upon Happiness;' 3. 'Verses on receiving a Flower from his Mistress.' In a volume entitled *Miscellaneous Poems by several hands,* London, 1729, 12mo, he is particularly named as a contributor. In this collection, which was edited by Mr. Ralph, the pieces are anonymous; but I observe, 1. 'A Paraphrase on the latter part of the 6th chap. of St. Matthew;' 2. 'The incomparable soporific Doctor;' 3. 'The happy Man;' 4. 'Hymn on Solitude.' These poems were undoubtedly written by Thomson; and they were reprinted, perhaps for private circulation, uniformly with *The Seasons,* 1730, 4to. In the *Works* of Thomson, as edited in 1750 and 1762, the minor pieces are fourteen in number; but we miss 'The soporific Doctor' and 'The happy Man.' The most ample collection is contained in the Aldine edition of the *Poetical Works of James Thomson,* 1830, 2 vols."

Of the condition of Thomson's family, the Memoir already referred to has the following:—

"Notwithstanding what Dr. Johnson states, whose opinions of Thomson himself, and all that concerned him, are shewn by Sir Harris Nicolas to have been exceedingly unfriendly and prejudiced, the poet's father, though blessed with nine children, must have been rather well to do in the station of parish minister of Ednam, which he filled with respectability and piety. The stipend was paid in money, and amounted to nearly 100*l.* a year, besides a cow's pasturage, house, and garden, and a large and productive glebe; which, added to the income from the small estate of Mrs. Thomson, must have been a more ample provision than was enjoyed by many clergymen who nominally possessed a much larger revenue, but were paid in grain, and liable to fluctuations with the price of that commodity. These having increased with the rise in the value of produce, whilst Ednam has remained stationary, with the exception of two augmentations, may have led to the notion that it was comparatively a poor living a century and a half ago, which, in point of fact, it was not. The minister's income from the kirk, according to data applicable to the present day, would be equal to not less than 300*l.* per annum; which is still deemed an adequate fortune for that condition of life in a rural district. The manse, or house, was beautifully situated at the east end of the village of Ednam, or Edenham, with the garden in front, bounded by the river Eden on the south; a fine 'trouting' stream, which rises in the Lammer muirs, and falls into the Tweed about four miles from the village. Almost immediately behind the manse was the mansion house of the Edmondstones of Ednam, an ancient border race, who for eight hundred years possessed the fertile barony of that name; dismembering it, however, piecemeal, till the last portion was sold some forty or fifty years after the birth of the poet. It is a curious circumstance that this ancient line never rose beyond the state of feudal country gentry, though inheriting immense estates and descended from royalty; Andrew Edmondstone in 1388 having married the widow of the Douglas slain at Otterburn, who was the daughter of King Robert the Second. Many amusing anecdotes might be given to illustrate the intercourse between the laird and the minister; but as in the foregoing collateral episode our object is simply to relate matters, the effects of which upon his young mind can be readily traced in many of the scenes, pictures, traits of character, and descriptions in Thomson's poems,

we shall only mention one, exhibiting the first state of society presented to his eyes among his father's parishioners much more than a century ago, and resembling those phases elsewhere which taught his young idea how to shoot the glowing sketch of squirearchy revels. The laird, it appears, had a terrible dislike 'to the rowting and skirling of the congregation,' as he irreverently termed the Scottish psalmody; and as his abode was very near the kirk, the loud singing on a Sunday morning was very apt to disturb his complacent slumbers, and prevent his sleeping off the debauch of 'Saturday at e'en.' To get rid of the nuisance, he built another place of worship, and a miserable hovel it was, at a greater distance from his residence; and it was only within the present century that, on its becoming ruinous, the kirk of Thomson's infancy was restored to its proper site in the churchyard of Ednam."

The present incumbent, from whom Mr. Corney got the certificate of baptism, bears also the honoured name of Thomson.

Many recent circumstances might be adduced to illustrate the effects of Thomson's writings,—such as grand musical festivals—the enthusiastic admiration of Beethoven—the erection of a column to his memory on a hill in the parish of Ednam—the observance of his nativity in the neighbourhood of that village—and other tributes which shew how long the influence of the bard outlives his mortal existence; but proofs of this would be but trite; and we take our leave of this miscellaneous paper—

> Long, long the stone and pointed clay
> Shall melt the musing Briton's eyes;
> O vales, and wild woods! shall he say,
> In yonder grave your Druid lies!

NEW PARADISE ON EARTH (*not Fool's*).

The Paradise within the reach of all Men, without Labour, by Powers of Nature and Machinery, &c. By J. A. Etzler. Pp. 56. London, Cleave.

DON QUIXOTTE has heretofore been thought an intelligent sort of madman, but must hereafter take his place among the decidedly insane. He tilted at the windmills; and had he been stout enough, with his lance in rest, would have thrown them down. Now Mr. Etzler has discovered that nothing more is necessary for the paradisaical happiness of man upon earth than to cover land and sea, in certain situations, with windmills. These are to do all his work, perform the labour of the agriculturist, the operations of the manufacturer and mechanic, the intellectual processes of the statesman and philosopher; and

> "Toil and poverty will be no more among men."

The time required for consummating this species of millennium is only ten years—the period of the siege of Troy, the quite the reverse of A-kill-ease.

First, Mr. Etzler tells us about the power of the wind, which he estimates, at the lowest, at one-horse power for every hundred square feet throughout the year. Now why should such a force as this be allowed to waste and vanish as it were into thin air? Why not use it from the surface of the globe up as high into the fifty miles of atmosphere which surround it as we can go? Mr. Green is about to balloon it for the United States, and return *via* five miles on an average above the Atlantic wave;—why should not skilful and ingenious persons make (if not shoes, stockings at any rate) parasols, umbrellas, cloaks, hats, caps, and other coverings, by means of windmills, at the same altitude? It cannot be questioned that their productions would have a ready *sail;* and distress could hardly reach them in the worst or most stormy seasons. Raising the wind—so difficult below—would rarely or never inconvenience them. Their inexpensive gases would be all lit without trouble. In short, they would enjoy many superior advantages over even the improved operatives, or rather supervisors of operations, on the terrene solid. Here we should be obliged to expose to the action of the wind surfaces, say 200 feet high, and a mile or 5,000 feet long—the tottle of the whole being 1,000,000 square feet, or 10,000-horse power; and these surfaces, "by some contrivance" intersecting the direction of the wind at right angles, so as to receive this power at all times—other similar lines of mills following, each at the distance of a mile behind—it is the easiest thing on earth to perceive that a hundredfold more business would be transacted by them than can be needful for all the population of the globe, if increased a hundredfold; or, as our author and wonderful inventor more magnificently expresses it, "10,000 times more can be done in 1 year than hitherto in 10,000 years:" and well may he add (p. 11), "*To what awful grandeur may not the human race exalt themselves!*"

Hitherto, it seems, there has been a mistake in only allowing the wind to act when it listed upon machinery in immediate use: Mr. E. proposes to collect and store it up for reaction when it shall be wanted, and not suffer operations to cease when it pleases it to cease to blow. Just as we keep and put on steam!

But the marvel of marvels is, that having discovered this glorious Windfall, more than sufficient for all human purposes, our pre-eminent speculator is far from being content with only one such power. He takes up "the tides," and shews that in the affairs of man they may be made to execute as much as the winds themselves. He next raises a third power, equal to either,—that power which a distinguished writer of a former generation informed us could, in a certain learned island, be extracted from cucumbers. Mr. E., on the contrary, deriving "sunshine" from its natural source, the sun (though lately so bitterly eclipsed, that the bonny lady-moon outshone him beyond measure), creates a series of heat or heats with "looking-glasses or reflectors;" and with the warmth so generated boils water, roasts meat, produces steam "exceeding all bounds of imagination" (p. 20); and, briefly, supersedes Ude and French cookery, Watt and steam-engines, railroad-travelling by locomotive or atmospheric pressure, and does all else in the world not already done by the obedient winds and tides!! We need not go into his mathematical calculations on the subject: pity they were not brought before the British Association at Manchester. We cannot, however, resist stating the sunny conclusion at which our unrivalled magician arrives:

"Experience teaches that a common labourer is able, by steady work, to raise 20 pounds 2 feet per second; consequently, a power of 1000 millions of pounds, with the same rate of motion, is equal to 1,000,000,000 divided by 20, or 50 millions of men's power. If we allow but 6 hours' sunshine every day in an average, and 12 hours' time for work for men, that power would still be equal to 25 millions of men's power. But this instance shews that we are under no limit of power for any purpose we may conceive, and that this power requires comparatively but little room in its application. You may perhaps startle at the idea of immense expenses and materials of such a powerful engine. But here I have to recall to your mind what I have stated already concerning the construction of steam-engines; namely, we need no metals and no other expensive materials for the engines, though iron and other cohesive metals are the most convenient. The pipes, or rooms of confinement for the steam, may be made of one solid stone, cast or moulded, and baked to a hardness and consistency equal to the best stone to be found, of any thickness that may be required, and sunk into the ground. The head of the piston may consist of the same material. The piston itself and the cover may preferably be of iron. The baking of such stones is an object of the sequel of my proposals."

To sum up:—

"Have I," he asks, with the beautiful consciousness of not having asked more than he has proved, "have I asserted too much, when promising to shew that there are powers in nature million times greater than the whole human race is able to effect by their united efforts of nerves and sinews? The power of steam and the power of wind may be applied over the whole globe, land and seas, either simultaneously or alternately, as found convenient. The three gigantic powers of steam, wind, and waves, may be applied on the high sea, simultaneously, or one or two of them in the failure of others. The four powers of steam, wind, waves, and tide, are at once at our disposal along the coasts and upon shallows of the ocean; there will never be an entire stop of all at once. There are parts of the ocean where clouds and fogs with wind are, and other parts where a clear sky with calms is prevailing: in the former we have wind and waves, in the latter sunshine for burning mirrors, at our disposal. In making use of one or the other power, just as chance affords, we are enabled to cross the ocean in any direction with floating islands at the rate of 1000 miles per day, in all commodities and enjoyments that may be found on land, without any danger. How to create rivulets of sweet and wholesome water on floating islands in the midst of the ocean will be no riddle now. Sea-water changed into steam will distil into sweet water, leaving the salt on the bottom. Thus the steam-engines on floating islands for their propulsion and other mechanical purposes, will serve in the same time for distillery of sweet water, which, collected in basins, may be led through channels over the island, while, where required, it may be refrigerated by artificial means into cool water, surpassing in salubrity the best spring-water, because nature hardly ever distils so purely water of itself without some admixture of stuffs of less wholesome influence on the human body, as it may be done here artificially."

After such tremendous discoveries, it was hardly worth while for Mr. Etzler to go to demonstrate, that there are many minor powers in nature which would really, if properly set to work, effect millions of times more than all the thews and sinews of the human race. We are satisfied with what can so easily and effectually be done by Messieurs Wind, Tide, and Sunshine; and know not why we should admit into the Co. and co-operation Messieurs Waterwell, Lever, Gum, and Co. It is true that the former might be made to perform all agricultural labours, and the last undertake the clothing of mankind; but still, under the circumstances, they appear to us to be, as our French neighbours say, *de trop*, and we shall be able to get on very well without them. It may, however, be but an act of justice to Mr. Etzler to give one extract in illustration of his

superb designs even through minor and inferior agents:—

"I shall (he says) give here a general outline of the system of machineries and establishments to be pursued. We drudge and toil in agriculture, in architecture, in navigation, in all workshops, and in manufactories, for making many useful and many useless things for human life, for supplying many various demands of necessaries, comforts, and luxuries of life, of fancy and fashions. We little care about the real benefit the produces of our industry may afford to the buyer, provided we get pay for them, and make money by their sale. There is an endless variety of artificial productions of every kind, resulting from competition of the producers. I have promised contrivances for superseding all human labour. To imitate minutely all the infinite variety of produces of human industry by machineries, would be an endless, ungrateful, and foolish undertaking, though it might be possible. It would nearly require to invent for every little work of man a particular automaton. This is not my purpose. But the most simple contrivances I could think of, and as few as possible, for producing, not the customary articles of human industry, but all things that may either substitute or surpass the known necessaries, comforts, and luxuries of men, are my objects in view. This problem is not so difficult as might be imagined at first. There was never any system in the productions of human labour; but they came into existence and fashion as chance directed men. Still less was there ever a thought exhibited to make a general science or system of providing for all artificial human wants. My object is to furnish, by an extremely simple system, all what may be desirable for human life, without taking for pattern any of the existing things of industry. By abstracting from all what is in existence and fashion, I am enabled to devise means, without any artificial machinery, for producing every thing that man may want for his nourishment, dwelling, garments, furnitures, and articles of fancy and amusements. But we have to relinquish entirely all our customary notions of human wants, and substitute them by others of a superior and more systematic order. I shall begin with agriculture. The first object is here, to clear the ground from all spontaneous growth and stones. 1. A machine of large size is to move along, and, while moving, to take the trees of all sizes with their roots out of the ground, to cut them in convenient pieces, to pile them up, and to take all stones out of the ground to any required depth. 2. A second machine is to follow, for taking up the piles of wood and stones, and transporting the same to the places of their destination; this machine may carry thousands of tons at once. 3. The wood removed to its places for final use is then to be formed into planks, boards, beams, rails, pieces for fuel, and for any other purpose, by a simple contrivance, from whence it is to be removed to the places where it be wanted; this is done by one machine, which may also cut stones of any size. 4. The first-mentioned machine, with a little alteration, is then to level the ground perfectly, in planing it, filling the excavations or taking off the elevations of ground until all is level. If the hills or valleys are considerable, the same machine cuts terraces, winding around them up to the top in elegant shapes. The same machine may make any excavation or elevation, cut canals, ditches, ponds of any size and shape, raise dams, artificial level roads, walls, and ramparts, with ditches around fields as enclosures, with walks on their top, form walks and paths with elevated borders. 5. The same machine, with some other little alteration, is to give to the ground its final preparation for receiving the seed; it tills the ground in tearing the soil up to any required depth, refining or mouldering the same, sifting all small roots and stones from it, and putting the seed into the ground in any way required. 6. The same machine may take good fertile ground from one place to some other, for covering, at any required depth, poor soil with fertile soil of the best mixture. 7. The same machine, with a little addition, may reap any kind of grain or vegetable, thrash the seed out in the same time, grind it to meal, or press it to oil; it may also cut or prepare any other vegetable for final use in the kitchen or bakery. 8. Another small machine may sink wells and mines to any required depth and in any direction, and take the contents of the same up to light: it may be in earth, rocks, swamps, or water."

Come we, towards the conclusion, to the plan for enabling our species to reap the fruits of these discoveries, which are to render the curse, that man shall eat his bread by the sweat of his brow, no longer a law of nature; and we find the whole exquisitely provided for. "A system of building is to be contrived for lodging thousands of families together (a new family compact), without causing any inconvenience to any of the inhabitants, and with every thing for their enjoyment within their reach at any time, without trouble, while it is put into every one's power to afford or to receive any social pleasure of refined society" (pp. 35, 6). We need not go into the details; they are perfectly satisfactory; and only from one to three persons will be wanted occasionally "to superintend the kitchen department and some other machinery" for the entire community. There will be superb views—lovely walks at hand—baths hot and cold—chemical scents and fresh air, as required—ice-cellars to cool, and sunbeams to warm, the atmosphere,—and, in fine, make it most agreeable and convenient to live in all the energies of healthful function, never be out of temper, always possess blooming countenances, and hardly to die, unless you like it by way of a change.

Need we go farther? It only wants the formation of a Union or Association for the improvement of the Human Condition to carry out Mr. Etzler's rational projects, and to propagate a "net of similar societies" throughout Europe, Asia, America, Africa, Australia, and —— the Moon, which we earnestly recommend to the patronage of all the inhabitants of these countries, and others of the more distant readers of the *Literary Gazette*.

The Ceylon Miscellany, No. I. Edited by E. Rawdon Power, Esq., Civil Service. Pp. 112. ALL the way from the far East, we have here the first of a quarterly magazine, containing some articles of much novelty and interest. The commencement of a grammar of the Kandyan Law (thirty-two pages), by J. Armour, Esq., is full of curious information relating to the early annals and traditions of the island, and the present state of the native legislation. Another paper of peculiar attraction begins a journal of the military operations in Ceylon in 1815; and a memoir of the late Mons. Burnand, explaining the condition of the country to Sir Alexander Johnston, also merits attention and praise. Notes of an overland journey to England make a very useful guide; and there are other contributions of various kinds to instruct and amuse the reader, both in India and at home. Among which, the following unpublished "Dirge," by L. E. L., will be perused with melancholy emotions: it seems as if it came from her distant grave:—

"My thoughts shall be of thee
In the silent midnight hour,
When the wind weeps like a dirge,
And spirit and star have power:
And I will deem thy voice
Is floating on the air;
I will look to the heaven,
Believing thou art there.
And the summer's lightning's flash
Shall be to me a sign
Of mystery and of beauty,
To say that I am thine.
Then I will seek my pillow,
And I will dream of thee,
Of happiness and hope
Which never more may be.
And then I may forget
That thy sleep's beneath the wave,
Or at least I may believe
That I am in thy grave."

Revue de Bibliographie Analytique, ou Compte rendu des Ouvrages Scientifiques et de haute Littérature publiés en France et à l'étranger. Par MM. E. Miller et A. Aubenas. 8vo. Paris. January to June 1842.

WE cannot let pass the opportunity of calling the attention of our readers to this excellent Review, of which we have been watching the progress for some time, and can honestly bear our testimony to its utility. It is the best review we know devoted to a running account of the more serious literature of the day. Both its editors are well known for their accomplishments; and M. Miller, in particular, stands high in the list of continental critics. The notices of books are classed under different heads, such as theology, jurisprudence, arts and sciences, ancient literature, modern literature, Oriental literature, voyages and travels, history, and antiquities; and instead of long dissertations on subjects connected more or less with the works reviewed, the editors give clear and sometimes analytical accounts of the contents and characters of the works themselves. In the numbers before us, besides the review of a host of books published in almost every country in the world, we have many notices of English books, which are justly and fairly appreciated.

Torrent of Portugal. An English Metrical Romance: now first published from an unique manuscript of the Fifteenth Century preserved in the Chetham Library at Manchester. Edited by James Orchard Halliwell, Esq., F.R.S. &c. 12mo. Lond., J. Russell Smith. 1842.

THIS is a valuable and interesting addition to our list of early English metrical romances, and an indispensable companion to the collections of Ritson and Weber. The text is unfortunately preserved only in one manuscript, and that a very corrupt one; but even this drawback is more than compensated by a number of provincial and dialectic forms and expressions which we should not have found in a good manuscript. The Romance of Torrent is evidently taken from a French original, which, however, is not now known to exist: it is a tale of adventures and knight-errantry—full of encounters with dragons and giants, of hardy deeds and narrow escapes. It contains many allusions interesting to the antiquary; and none more so than the curious notice of Weland the smith, that singular personage of northern romance, who, under the name of Wayland Smith, has risen up to new life under the powerful wand of the northern magician.

We strongly recommend this curious volume. As far as we have had time to examine it, it seems well and carefully edited, and entitles Mr. Halliwell to new thanks from the lovers of our national antiquities, to illustrate which he has already contributed so much. His present publication has a threefold importance,—as illustrating the history of mediæval literature, the forms and dialects of the English language, and the history of romantic fiction.

Traits and Stories of the Irish Peasantry. By W. Carleton. Part I. Dublin, Curry jun. and Co.; London, Orr and Co.

COMMENCES a new monthly edition of the popular writings of W. Carleton, than whom, as we stated in a former notice, a more genuine painter of Irish nature and character has not appeared, even during a period when both have been so admirably illustrated by our Lovers and Levers, our Maxwells, Banims, and Halls. Etchings by Phiz, and clever and amusing wood-cuts, embellish the series (if we may judge from its first Part) in a very appropriate style. A comprehensive explanatory introduction and notes also do much in the way of improvement, though (in our copy) the former breaks off suddenly at p. xvi., and we cannot tell whether it is accidental, or a break in what is meant to be continued.

Memoirs of the Right Hon. Sir R. Peel, Bart., &c. 2 vols. Lond.: Newby, T. and W. Boone.

We should have imagined this too early a day to write the Life of Sir Robert Peel; but the author (also of the *Life of Wellington*) has thought otherwise, and trusted to the public appetite for a retrospect of the same, as far as it has gone. The work begins with a sketch of the father of the Premier, himself no ordinary man; and then goes through the whole public career of the Minister, from his boyish days to his speech on introducing the income-tax. The reports of parliamentary debates supply the mass of the materials; and other incidents are related concisely in the order of their occurrence. It is not our province to offer any opinion upon the subjects introduced and commented upon with a biographer's natural propensities. It is obvious that such a production can only speak of the known, without being competent to sift more private causes, and trace things to their real motives.

The Classified Spelling-book, with Definitions and Explanations. London, Burns.

A RATHER novel arrangement of the Spelling-book, but well adapted to assist the tutor and interest the scholar.

The Guide to Service. The Clerk. Pp. 140. London, C. Knight and Co.

EXPLANATION and advice for those employed in the office of clerk, and treating also of many collateral matters of considerable importance to the young entering upon busy life.

ARTS AND SCIENCES.

BRITISH ASSOCIATION.

SECTIONS.—TUESDAY.

SECTION A.

1. Prof. Bessel, "On Astronomical Clocks."
2. Mr. F. Osler, "On the application of the principle of the Vernier to the subdividing of Time."
3. Sir D. Brewster, "On a new property of the Rays of the Spectrum, with observations on the explanation of it given by the Astronomer Royal on the principles of the undulatory theory."
4. Sir J. Herschel, "Report on Magnetic and Meteorological Co-operation."
5. Sir J. Herschel, "Report of the Committee for revising the Nomenclature of Stars."
6. Sir J. Herschel, "Report of the Committee for the Reduction of Meteorological Observations."
7. Rev. Dr. Scoresby, "On improved Permanent Magnets, and the modes of determining their powers, with certain undescribed Phenomena in Permanent Magnets."
8. Col. Sykes, "On the Meteorology of the province of Coorg, in the Western Ghauts of India."
9. Mr. L. Howard, "On the Cycle of Eighteen Years in the Seasons of Britain."
10. Prof. Lamont, "Report on the Meteorology of Germany."
11. Sir D. Brewster, "On the Dichroism of the Palladio-chlorides of Potassium and Ammonium."
12. Sir J. Robison, "On a new Optical Instrument."
13. Capt. Fairbairn, "On Change of the Climate of England."

1. Professor Bessel, having ever been of opinion that the transit-clock, so indispensable to the astronomer, could only be perfect if the pendulum, separate from the whole of the works, were made to vibrate in equal time whatever the temperature and arc might be,—suggested whether the test of coincidences might not be employed to check the pendulum both for time and for temperature. He submitted this particularly to Mr. Frodsham, after noticing his ingenious contrivance of the isochronal piece to compensate for the variation of the arc, which, had it been successful, would have obviated the difficulty of making the rate of the pendulum independent as well of the vibration of the arc as of the action of heat. The pendulum, apart from the clock, being suspended from the wall, a clock, taken out of its case, might be placed before it at a distance of six or eight feet; an object-glass of three or four feet focal length might be placed between both, so as to produce, exactly at the lower end of the pendulum of the clock, an image of the lower end of the other pendulum. Then the coincidences of both might be accurately observed, by a telescope placed at a convenient position. Similar contrivances had been described in an account of some pendulum-experiments made at Königsberg; and the accuracy of the method was such, that the relative rate of both pendulums might be ascertained in a very short time—in from 10 to 20 minutes. The rate of the pendulum was to be tried at different temperatures, being placed in an open box, covered at the lower end with glass, and so fastened to the wall that the pendulum could swing within it. Two metal tubes should be passed through the box, with water or steam through them, that the air in the box might be heated. Previously to heating it, the air should be deprived of its moisture; and two or three thermometers, placed in different situations in the box, would shew that the heat was pretty uniform. Then, if the pendulum were swung both before and after heating, it would be easy to ascertain the rate, and compensate for the heat. He believed that not only the readiness with which both these experiments might be made, but also the perfect isolation of the pendulum, would recommend this method to artists and astronomers; and he had been desirous to try it himself, but had been prevented by delay in the construction of a pendulum provided with Mr. Frodsham's isochronal piece. Prof. Bessel preferred the gridiron to the other form of pendulum, and should prefer it still more, if the several rods were of equal diameter, and acted uniformly. Perhaps the application of galvanism, which Mr. Dent had so beautifully applied to coating spring pendulums with gold, would best answer the purpose. Supposing the spring perfectly regulated, as well with respect to the heat as the arc, only one cause would interfere with regular vibrating times. This was the effect of that quality of the air which depends on the variations of the height of the barometer; and the other part would depend upon the variations of the thermometer, and the adjustment for the compensation for heat. There was a possibility of compensating the former by fastening a barometer-tube to the pendulum, and it would not be difficult to find the suitable diameter of the tube; but he was aware, that this complication of the pendulum would be rather inconvenient. At all events, the variations of the barometer were not very great, especially if the compensation of the pendulum be made as great as possible. He submitted these hints to those celebrated artists, whose admired works had very greatly contributed to the promotion of astronomical purposes, and the determination of the longitude.

2. Professor Stevelly read Mr. Follet Osler's communication, the substance of which was, to have a small additional or vernier pendulum, with a wheel attached to it, swinging in ·1 or ·01 part of the time of another pendulum. Then by watching and stopping it at the very instant of coincidence, the small dial would shew the number of tenths or hundredths of a second in the interval.

3. Sir D. Brewster then said he had particular pleasure in introducing the subject of his communication, as there were now present all those distinguished men in Great Britain, who had devoted their attention to the investigation of the physical properties of light,—Sir J. Herschel, Sir W. Hamilton, Dr. Lloyd, Prof. Baden Powell and Prof. M'Cullagh. If we cover half the pupil of the eye with a thin plate of any transparent body, and thus have a prismatic spectrum, so that the rays which pass by the plate interfere with those that pass through it, the spectrum is seen crossed with beautiful black and nearly equidistant bands, whose breadth, generally speaking, increased with the thinness of the plate. If the edge conveying the ray were directed to the red end of the spectrum, then fringes were seen; but no such fringes appeared when it was turned to the violet end of the spectrum. One peculiarity of these fringes, not before noticed, was that they had not the form of bands, but rather the appearance of screws, or dotted black lines, or as if they were formed by the shadow of a plate of metal perforated by small openings. This, which appeared to be a new property of light, and to indicate a polarity in the simple rays of light, when separated from each other by refraction, he had commented on at the meetings of the Association at Bristol and Liverpool; and Mr. Airy, the astronomer royal, had given a paper and two publications on the subject, in which he endeavoured to account for this upon the undulatory theory, arguing that the appearance and magnitude of the fringes depended upon the diameter of the pupil or of the object-glass. Sir D. Brewster said, he had repeated all his experiments under every variety of form, varying the diameter of the pupil from its greatest expansion to its greatest contraction, and the diameter of the object-glass from four inches to a quarter of an inch, and the fringes remained utterly unaffected by these variations; and he was therefore entitled to conclude that the undulatory theory had not furnished the slightest explanation of these phenomena. He further found, that these fringes varied in magnitude with the distance of the eye from the refracting body, and not with the magnitude of the pupil. He stated several other results, all of which he thought could not be explained on the principles of the undulatory theory.

Sir W. Hamilton said, that those who most valued the wave-theory must be delighted to hear these new facts of Sir D. Brewster; for even if they should seem to overthrow the theory, supplemental examinations might shew

that some new principle must be the result; for there could be no hostility between one truth and another.

Sir J. Herschel said, that the undulatory theory appeared to be placed in the same position once occupied by the theory of gravitation. When explanations of difficulties by that theory were attempted and broke down, it only proved that enough was not known of the theory; for it was ultimately triumphant. The undulatory theory had already explained so much, and gone so far to predict consequences which could not otherwise have been predicted—as in the extraordinary phenomena of conical refraction discovered by Dr. Lloyd and Sir W. Hamilton, and of circular polarisation artificially produced by Fresnel, that he (Sir John) must altogether protest against putting it on its trial for life and death upon every new fact which occurred, except with a reserve in favour of the prisoner—a leaning to the side of mercy. The phenomena just noticed by Sir D. Brewster were extremely extraordinary, and deserved the highest consideration. He thought it was necessary to suspend our judgments till further inquiry and more facts threw larger light on the nature of this difficult subject. The screw-like appearance in the spectrum appeared to him one of the most extraordinary effects produced in the spectrum, which might be said to be a world within itself, and of which we knew little or nothing, compared with what remained to be known.

Sir D. Brewster said he by no means meant to put the undulatory theory on its trial on the whole question, but merely to try it upon this one count of the indictment, and it seemed to him to have failed completely in explaining these phenomena. If they believed the experiments he had made, they must believe in the failure of the theory in this instance; but he by no means expected, that the undulatory theory was to fail in other and future cases, because it failed in this. He was a great admirer of the undulatory theory: only it was so hardly pressed as something which we must believe, but could not believe, that he and two or three other gentlemen had a peculiar pleasure in finding and proving that it was not perfect to explain all things.

Prof. M'Cullagh said, we as yet knew so little of the undulatory theory, that we could not say what it might do hereafter. As yet, it was not based upon any physical principles, with the sole exception of the one of interference; for he put no faith in Fresnel's mechanical theory of refraction, which appeared to be discovered by some kind of mathematical deduction, and then explained by principles invented for the purpose. There were facts, too, which contradicted the fundamental principles of M. Cauchy, as expressed in his fundamental equation, —which equation was absolutely contradicted by the well-known fact of circular polarisation. So long, then, as we knew nothing absolutely of the undulatory theory (though he would allow that it had explained many things in a very beautiful way), yet, being entirely without physical foundation, we could know it but very imperfectly; and perhaps these mathematical investigations were causing us to lose sight of the physical inquiry.

Sir D. Brewster expressed his warm concurrence in the views so well stated by Professor M'Cullagh, respecting the necessity of going back to experiment as the only sure guide towards a true theory of light. The undulatory theory, which Prof. M'Cullagh had justly characterised as explaining only some of the "grosser phenomena," had been supported in such a manner as to retard the progress of optical science, by discouraging all experimental researches, by which alone the laws of phenomena could be established. Persons who knew little of the subject had lauded this theory as perfect, and as affording a satisfactory explanation of all the phenomena, and even ventured to place it on the same level as the theory of universal gravitation! The physical facts which it explained, or pretended to explain, were held up as great discoveries; while facts far more interesting and valuable were either treated with contempt, or considered of no value, solely because they were either hostile to the theory, or could not be explained by it. To such an extent, Sir David added, had this process of discouraging science been carried, that even learned societies were so completely under the incubus of the undulatory theory, that they rejected papers containing experimental researches, solely because the authors of them, or the results themselves, were hostile to the favoured theory; and this, too, when the authors of these papers were among the oldest and most active members of the society, and had published in their transactions from thirty to forty papers of a similar kind, without any such jealousy having been felt or expressed.

Dr. Lloyd agreed with Prof. M'Cullagh as to the want of a sufficient physical basis for the theory; though, besides the principle of interference, there was also the well-known physical principle, discovered by Dr. Young, of transversal vibration.

Prof. M'Cullagh: That is rather a mathematical principle; but we need not differ about words.

Dr. Lloyd said that, at all events, it was capable of being viewed as a physical principle. Admitting with Mr. M'Cullagh its want of physical principles, we could not but regard it as a marvellous thing that a theory, with so few physical principles, should have gone so far to explain many phenomena; which fact proved, not that the theory was faulty, so far as it had gone, but that it had a parallelism with truth. No doubt the phenomena of absorption, and some of those of the spectrum, might require hereafter further physical principles, in order to render the wave-theory applicable; and therefore the proper course was, not to view the facts as adverse to the theory, but as requiring some addition to it, or perhaps merely an altered mode of considering the particular cases.

Sir Wm. Hamilton merely wished to enter his protest against the notion, that they, the wave-men, were at all wavering—that the undulatory theory was at all undulating in their minds: the Dublin wave-men retained as strong a conviction as ever of the substantial truth of the wave-theory. The only practical question, as given by Prof. M'Cullagh, was, whether the French dynamical explanations of M. Cauchy were founded in physical truth; and, on that subject, Mr. M'Cullagh was an excellent authority. He (Sir William) was not sanguine enough to expect or hope, that at one bound they could get at the physical construction of so subtle an element as light. He did think, that more subtle elements of investigation should be brought in; and that, by something more deeply metaphysical, some new ideas should be introduced into this branch of science. It was, however, a hopeful train of research, if it were only to come to the exact point where it broke off. He hoped Professor M'Cullagh would publish his refutation of M. Cauchy's theory, particularly as it bore on circular polarisation. He desired to see the matter brought to some stopping-place, whence they might look out for new and higher tracks to be pursued.

Prof. M'Cullagh said he did not wish to be understood to express any doubt of the undulatory theory; but he wished that it should be kept distinct from the notions of those who had advocated it, and asserted that it explained phenomena which it did not explain. On the other hand, he maintained that we did not know enough yet of that theory to say that it failed to explain certain phenomena.

The Dean of Ely said, however difficult the question was, the members of the Section had had the opportunity of hearing the opinions thereon of the great authors, not only of the undulatory theory, but also of nearly all the most important optical researches in modern times. Sir D. Brewster might be called the founder and father of modern experimental optics. They must all be greatly indebted to him, if, in the course of his experimental inquiries, made with an accuracy not belonging to any other experimentalist, he presented to the mathematical minds of the country a *pierre de touche* which would test this or any other part of the undulatory theory. We were perhaps a little too impatient, with reference to what this theory would or would not explain,—too much disposed to accept or to reject it on insufficient evidence. We should recollect that it was a century and a half after Newton's discovery of the theory of gravitation, before all the problems coming under that theory could be solved by it. It was not much more than 50 years since the undulatory theory was first proposed, and not more than 20 since the principle was mathematically investigated to any considerable extent; and in every case of this kind we should judge *à posteriori* and not *à priori*. He trusted that this discussion would be instructive to all philosophers engaged in the serious and earnest investigation of truth.

4. To the copious and highly interesting abstract of Sir J. Herschel's "Report on Magnetic Co-operation" already given (*Lit. Gaz.* No. 1329), we have only to add (Nos. 5 and 6) that the committee for revising the nomenclature of stars deferred reporting until the catalogues of stars were ready for publication; and that the committee for the reduction of meteorological observations, in consequence of the illness of Mr. Barlow, had been unable to make any considerable progress.

7. For Dr. Scoresby's paper, see *Literary Gazette*, p. 493.

8. Colonel Sykes's principal object was to shew that the horary, or, as he suggested it should be called, the semi-diurnal, oscillations of the barometer were identical at Plymouth, near the level of the sea, in the Deccan, 2000 feet above the level, and (as observed by Humboldt) both at that level, and on the plains of Mexico, 8000 or 10,000 feet above the level of the sea; so that it might be expected, with further observations, to see these periods (which will be found in Mr. Snow Harris's communication of Monday, p. 516) eliminated into a general law of nature.

9. Mr. Luke Howard's communication was illustrated by diagrams and tables, and was the result of a series of meteorological observations commenced at the Friends' School, Ackworth, in the year 1824. Mr. Howard had found that the sessons came round in a cycle of 18 years; and that of these, in the first nine, beginning with 1824, warmth predominated, and in the last nine, ending with 1842, cold predominated. Out of the nine cold years we had just emerged. He had constructed a thermometrical curve for the nine warm, and another for the nine cold

years; and he exhibited these in juxtaposition, and with a curve of the sun's declination. He had also projected similar curves for the rain during the whole 18 years, on the average of each month; and he found the total amount of the rain in the nine warm years 238·68 inches, averaging 21½ inches per annum. In the nine cold years it was 234·33 inches, averaging 26 inches per annum; so that there was, on the average, an excess of half an inch of rain per annum in the warm years. As to the distribution of rain in the warm years, as compared with the cold ones, December, January, February, and March, were comparatively dry months; and then came a glut of rain in April —a distinguished characteristic of warm years; and dry winter months, with rain in April, he regarded as a most favourable season for agriculture. Then May was fine (as to rain) in both cases; and the rain was nearly the same in both cases, in June and July,—rather more abundant, however, in cold than warm years. In cold years August was dry, and in warm years wet. September was wet in warm, and dry in cold years; in October, the cold and warm years nearly agreed in quantity; November was rather wetter in cold than in warm years; and December was dry in warm years, and in cold years an exceedingly wet month.

10. Prof. Stevelly read a report from Dr. Lamont, director of the observatory at Munich, stating the names of a great number of professors in Germany, France, Italy, &c. who were aiding in taking meteorological observations (commenced seven months ago), so as to present a complete series, extending over the vast tract of country between the Pyrenees and the Persian frontiers.

11. Sir D. Brewster gave an account of the remarkable property possessed by the palladiochlorides of potassium and ammonium, of giving different colours when looked through in different directions. These salts crystallise in quadrangular prisms. When we look through the faces of the prisms their colour is *green*, and continues green at all inclinations in a plane perpendicular to the axis of the prism. When the crystal, however, is inclined in a plane containing the axis of the crystal, the *green* colour changes gradually to *red*, and the light is entirely red when we look along the axis of the prism. When two prisms are placed together lengthways, the light which passes both is *green;* but if they are placed at right angles to each other, the light which passes through both is *red*. Sir David shewed that these phenomena arose from the circumstance that *one* of the images which these crystals form by double refraction is *red*, and the other *green*. Dr. Wollaston had long ago noticed the two different colours exhibited in crystals of muriate of palladium.

12. The optical instrument proposed by Sir J. Robison was a funnel-shaped glass vessel, by means of which the bottoms of cavities may be distinctly seen: accident led him to the invention, but as yet he had not completed his experiments.

A conversation ensued, in the course of which it was stated by Professor Braschman and Mr. Irwin, that, both in Germany and England, the principle was applied to the construction of medical instruments. They were not, however, of solid glass, but silver tubes, which, as employed by Dr. Turnbull, enabled the operator to see the small bones at the back of the tympanum of the ear, the light being reflected alternately from side to side in the interior of the tube, and finally transmitted in a highly luminous pencil.

13. Capt. Fairbairn predicts this year uncommonly cold and ungenial.

SECTION B.

The following were the proceedings on the list; but they were much departed from.

1. Prof. Erman, "On Hæmatoxylin."
2. Mr. C. Wye Williams, "On the advantages and disadvantages of Hot Air in effecting the Combustion of Coal."
3. Mr. Lucas, "On the Production of an Artificial Copper Pyrites."
4. Mr. Booth, "On some recent cases of Fires produced from Spontaneous Combustion; and on the danger arising from the use of certain 'Instantaneous Lights.'"
5. Prof. Graham, "On certain Thermometrical Researches."
6. Dr. Playfair, "Notes on the Composition and Characters of Caryophyllin."
7. Abstract of Letters addressed to the Section.

Mr. Mallet read a third report "On the action of air and water on iron." The object of former tabulated results was to determine the actual loss by corrosion in a given time, and the comparative durabilities of rust of the principal kinds of cast-iron of Great Britain, and to discover on what durability depended. The tables of experiments now presented shew that the rate of corrosion is a decreasing one in most cases; and that the rapidity of the corrosion in cast-iron is not so much dependent on the chemical constitution of the metal as on its state of crystalline arrangement, and the condition of its constituent carbon. The present report, too, extends the inquiry to wrought-iron and steel, of which between thirty and forty varieties have been submitted to experiment. The results are, that the rate of corrosion of wrought-iron is in general much more rapid than that of cast-iron or steel. The finer the wrought-iron is, and the more perfectly uniform in texture, the slower and the more uniform is its corrosion. Steel corrodes in general more slowly, and much more uniformly, than wrought or cast-iron. The action of air and water in the several classes of iron have been examined and chemically determined. The substance spoken of as plumbago was next described. It is produced by the action of air and water on cast-steel, especially that in the raw ingot, in the same way as it is in the case of cast-iron. A quantity of plumbago, found in the wreck of the Royal George, absorbed oxygen, on exposure to the air, with such rapidity, that it became nearly red-hot. Mr Mallet next described a method of protecting iron by a modification of the zinc process. It was found impossible to cover the surface of iron with zinc, to which it had no affinity. The first process was to clean the surface of the iron, taking off the coat of oxide, and then immersing it in double chloride of zinc and ammonium, which covered it with a thin film of hydrogen, by which its affinity for the zinc is much increased. The iron was then covered with a triple alloy of zinc, sodium, and mercury. Several specimens of this alloy were shewn; one of a bolt to be driven into a ship's side, and another a cannon-shot covered with the preparation, and exposed to the weather on the roof of a building, and which was perfectly preserved. Cannon-balls were so much oxidised by exposure to atmospheric influences, that in five or six years they become useless. The French Institute had been engaged in experiments to protect these, and had tried zinc, but had been compelled to abandon it. Mr. Mallet also brought under the notice of the Section a method of preventing the fouling which takes place on the bottoms of iron ships, especially in tropical climates; by means of which new invention, he had ascertained plants and animals were prevented from adhering to the ship's bottom. Another series of experiments related to the rate of corrosion of cast-iron, wrought-iron, and steel, exposed to atmospheric influences,—a matter of great importance to the engineer. The characteristic form of corrosion in air, as contradistinguished from that of water, was also pointed out. This series of inquiries was now complete. The next matter which had engaged his attention was the rate of corrosion of rails on railways. The general opinion was, that the rails travelled over were not corroded at all. He had been enabled to lay down three sets of rails on the Dublin and Kingston Railway: one not travelled over, the second in use and not exposed to corrosion, and the third also in use, but made impervious to moisture. The loss of the first was 2555, of the second 5344, and of the third 2650,—results which seemed to indicate, that the rail travelled over does corrode more slowly than that out of use. Mr. Mallet concluded by referring to Mr. Nasmyth's theory, that corrosion is checked by the trains passing over the rails always in one direction, and takes place when, as in the case of the London and Blackwall, trains pass both ways.

Mr. Mallet was justly applauded on the value of his investigations, their success, and the liberal manner in which he had conducted them, never for a moment thinking of any private advantage. In reply to a member, Mr. Mallet said, his preparation for the bottoms of iron vessels lasted for about two years and a half in Kingston harbour, in a vessel exposed to a rapid tide-way. He did not think it would answer for copper sheathing. Nothing but copper would protect wood; but he looked forward to the time when the greater proportion of our vessels would be constructed of iron.

A paper by Dr. Ure, "On a new method of analysing cast-iron," was then read; and consisted of a description of the process employed.

2. Mr. C. W. Williams read his paper. The subject of the consumption of smoke is fully discussed in our report of the proceedings of the Mechanical Section on Friday. The chemical question now entered on was that of diffusion, which, as Dr. Dalton has shewn, took place without regard to, and in defiance of, the laws of gravitation. An increase of temperature of the air in a bladder was shewn only to increase the bulk, and not to alter the oxygen contained in it. The more the temperature was increased, the greater distance the atoms stood from each other. There was, therefore, a great mechanical difficulty in getting a large volume of hot air favourable to combustion within a given time. The conclusion Mr. Williams came to was, that when we raise the temperature of the gas, and not of the air, we do all that is necessary.

1. The next paper was that by Prof. Erman, "On hæmatoxylin;" to which succeeded, No. 3, by Mr. Lucas, "On the production of an artificial copper pyrites."

5. Dr. Playfair said, that Prof. Graham had been unfortunately taken ill on Monday, and was compelled to leave for London. He had left a few notes "On certain thermometrical researches," which he had designed to aid him in an extemporaneous statement of his results. It would be an injustice to Prof. Graham to read these notes; but the paper was a valuable one, and would appear in the Transactions.

6. Dr. Playfair read "Notes on the composition and characters of caryophyllin." This was not an indifferent body, but formed salts.

Mr. Davies made some remarks on the better ventilation of coal-mines. Instead of ventilating the whole of the air of a mine, a pipe

was brought into contact with the fissure from which foul air proceeded, which was thus removed. The contrivance was suitable, Mr. Davies contended, for churches, chapels, and rooms for public meetings.

SECTION C.

1. Dr. Buckland presented "The Report on Railway Sections."
2. Mr. Murchison communicated "A Notice of Mr. M'Laren's Paper on the Union of Wavy Structure with Longitudinal Striæ and Polish on the Rocks of the Corstorphin Hills, near Edinburgh."
3. Prof Johnston, "Report (part 2d) on Chemical Geology."
4. Prof. Owen, "Report on British Fossil Mammalia."
5. Prof. Erman, "On the Geology of North Asia"
6. Dr. Buckland, "On Semicircular Cavities resembling rain-drops, caused by air-bubbles, on the surface of Soft Mud."
7. Dr. Lankester, "On Magnesian Limestone."
8. Dr. Daubeny, "On Magnesian Limestone."
9. Mr Schoolcroft, "On the action of Lakes in North America."
10. Mr Strickland presented to the Section "The Report of the Committee on Zoological Nomenclature."

Mr. Murchison opened the proceedings this morning, by presenting to the Section, from Professor Agassiz, of Neufchatel, the first part of a new work by him, containing a catalogue of all the scientific works, of every country, of a zoological character, whether published in regular volumes, periodicals, or in the transactions of philosophical societies. Also, from the same author, a systematic collection of the names, with their derivations, of all animals, whether living or fossil, as far as they are known.—The president also presented, from M. Krantz, of Berlin, a work on fossils, and a beautiful geological map of the island of Elba. The Royal Observatory at Kew will be the repository of these and similar gifts.

1. Dr. Buckland laid before the meeting sections of the various railways in the United Kingdom, with representations of the fossils and other objects of geological interest found in them, distinguishing the position whence they were taken.

2. See the title above.

3. Professor Johnston submitted a report on the relation of chemistry to the igneous rocks. The paper being of considerable length, and much business having to come before the meeting, he confined himself to a brief verbal summary of his communication. There were four points to which he wished to direct attention respecting these rocks; namely, their nature and chemical composition, their immediate source, and their morphitic and chemical effects. There were three classes of igneous rocks: the oldest were the *granitic;* the second were the *trap* rocks, including all their detritus; and the third the *lavas.* All geologists conceived that those rocks had been originally in a fused state, and protruded from the earth in a liquid form. What was most important in this respect was, that they were protruded from the earth in very different modes: sometimes a large mountain-mass of unknown depth was forced up through the stratified rocks, and remained lying at various angles; sometimes it was found *overlying* the stratified rocks; and sometimes protruding among them. These were the three modes in which the igneous rocks presented themselves in connexion with the stratified rocks. The changes produced by the igneous rocks on the stratified were either mechanical or chemical. Where an igneous rock came in contact with a slate rock, the latter became changed more or less. When two beds of the same strata overlying an igneous rock were differently affected, it was because, as Lyell observed, the composition of one was so far different from the other that they could not be similarly affected by the same amount of temperature. There existed in the interior of the earth certain substances which, either by themselves or by coming in contact with water or other substances, had given rise to volcanic eruptions.—The thanks of the meeting were then given to Professor Johnston.

4. Prof. Owen presented a report of the different genera and species of fossil mammalia found in Great Britain, fully given in the *Lit. Gazette*, No. 1329.

5. Prof. Erman read a short paper relative to that part of Northern Asia between longitude 100^0 and 160^0 east of Paris. The paper contained some interesting particulars relative to the geological features of that region. A numerous collection of lithological specimens was presented to the Section, along with his book, by Prof. Erman.

6. Dr. Buckland exhibited some specimens of sandstone containing a number of tubercles, supposed by some geologists to have been caused by rain-drops. He had that day received a letter from Prof. Lyell on this very subject. In that letter Mr. Lyell stated, that he had been at Baltimore, where he observed similar marks made in the mud by the rain. He had preserved some of the dried mud for the purpose of taking it to England. Some of the fishermen called these marks in the mud "bladders;" but that was what he could not understand. He (Dr. Buckland) thought this a very important communication. He thought the explanation given by the fishermen perfectly satisfactory. On examining similar places, he had observed that they were the effects of bubbles of air given out from the decomposing substances at the bottom of the mud.

7. Dr. Lankester next called attention to a large piece of limestone containing a number of cavities, which he said had been once the hiding-place of snails. In the neighbourhood of Plymouth he had observed a vast number of snails in the act of forming such cavities for themselves, and could quote a number of authorities confirming the opinion that the cavities in the limestone produced were so formed.

8. Professor Daubeny produced some specimens of magnesian limestone, and submitted the hypothesis which he had already offered to the Chemical Section in order to account for the peculiarity of their external appearance by the action of the weather upon them. He had paid considerable attention to the subject, had a large collection of specimens in his possession, and was inclined to think that the cavities on the exterior surface were the result of the corrosive action of water containing perhaps carbonic acid. The case was somewhat analogous to what he had pointed out at Plymouth in his paper on the rocks of the Tyrol, the substance of which was reported as follows:—"The author attempted to explain, without resorting to volcanic agency, the abrupt form, extraordinary height, naked outline, and fissured surface of the dolomitic rocks in the Tyrol. He attributed the above circumstances to the slow rate at which decomposition proceeds in rocks consisting of pure dolomite, and to the strength of cohesion which binds together the particles of this rock; owing to which, even those portions which stand prominent, in consequence of the removal, by the agents of destruction, of their contiguous parts, often remain unaffected by the mechanical forces which would cause the projecting portions of a rock less unyielding in its texture to become detached. The cause therefore of the greater height which is maintained by the dolomites of the Tyrol than by the pyroxenic rocks which accompany them, seems to be the inferior rate at which decomposition has proceeded in the former, whilst the bold and jagged outline they display may have been produced by the tenacity with which their parts cohere. The sterile character of these same rocks, even in parts which are not precipitous, appears to be owing to the slowness with which they decompose, as well as perhaps to the absence of organic remains."

Dr. Buckland could not coincide in the view taken by Prof. Daubeny.

9. Mr. Schoolcroft, an American, brought forward a communication "On the action of lakes in North America;" but, owing to the lateness of the hour, he contented himself with stating the purport of the paper. It appeared that, by the action of Lake Superior, the sandstone rock was gradually worn down; and sand thus produced being washed ashore, was carried by the wind round the neighbouring trees. Several forests had been covered in this way, and this process of destruction was still gradually going on. This fact might serve to account for fossil trees being found standing in sandstone formations. If the sand were allowed time to solidify, we should have something analogous to the fossil trees on the Bolton Railway.

The thanks of the Section having been given by acclamation to the president, the proceedings terminated.

SECTION D.

1. Dr. Hodgkin, "On the Races of Men."
2. Mr. Strickland, "Report of the Committee on Zoological Nomenclature."
3. Professor Owen, "Report on British Fossil Mammalia."

1. Dr. Hodgkin's was a very long paper; but the subject, of such universal interest, has been exhausted in the pages of the *Literary Gazette;* and though the summary and connexion of facts were listened to with deep attention by a crowded room, we did not hear any thing sufficiently new to induce us to enter upon the details.

3. Professor Owen's paper has also been abstracted in our journal, though new to this Section, and need not, of course, be repeated.

2. The only other communication was Mr. Strickland's report. It noticed the great confusion arising out of the existing nomenclatures of France, Prussia, and Germany, the authors of each being ignorant of the names given by the others. Genus was often designated by three or four names; and no rule was observed. In other sciences it was not so; for of late years chemists, astronomers, mineralogists, &c. had devoted themselves to fixing their respective languages, and it was full time that zoologists should do the same. Mr. S. was not averse to giving the names of the persons who first discovered any novelty; in this he agreed with Decandolle; but he wished it not to extend to authors older than Linnæus, *i. e.* previous to his binomial nomenclature. Generic names ought not to be cancelled in subsequent subdivisions; and any later name of the same extent as an earlier one, ought in justice to the first discoverer to be wholly cancelled. The report gave examples of all these, and went on to say that where different and compound names were not sufficiently distinctive in character, they should be united in one. Some exceptions were then pointed out and recommended to be removed: viz. when previously applied to another group and still retained; when glaringly false in meaning; when implying a false proposition likely to propagate important errors; when not clearly defined. Accidental names from monstrosities were very liable to abuse, and ought to be adopted with great caution. Mr. S. also alluded to M. Agassiz' nomenclature, mentioned in Section C, as being most useful in this re-

spect, and spoke of certain rules for converting Greek into Latin words for these purposes. In conclusion, he proposed a Greek or Latin characteristic word, the best being such as expressed some distinguishing character. Geographical names could hardly be used for genera; and for species only, when they were certainly confined to the country. Barbarous names well latinised in their terminations were admissible; and technical names applying to the habits of the animals were not objectionable. Mythological and historical names gave rise to pleasing associations—such as Progne for the swallow, Clotho for the spider, Hydra for the polypus, Athené for the owl; but comparative names were often erroneous. Specific names from eminent persons might be employed in moderation, but inferior ones were to be avoided; also long harsh names above five syllables. Hybrid names, Greek and English, or Greek and French, and nonsense names, and anagrams, were also improper, though Mr. S. did not entirely condemn them. The names of families should end in *idæ;* and of sub-families in *inæ*. Specific names of species should begin with a small initial; and, in fine, an ample public expression should indicate the new genera and species arranged and named according to this report.

SECTION F.

1. Report of a Committee, under whose superintendence it has been prepared, by Mr. A. Watt, "On the Vital Statistics of five large Towns in Scotland."
2. Mr. W. Hall, "On the differences of the Quality of the Milk of Cows, for the different purposes of Milk and Cheese, numerically expressed."
3. Dr. Alison, "On the Destitution and Mortality of some of the great Towns of Scotland."
4. Report of the Statistical Society of Manchester, "On the Vital Statistics of Manchester."

1. Col. Sykes read the report "On the vital statistics of large towns in Scotland." The committee had taken the necessary steps to obtain the desired information; and, in the valuable tables drawn up by Mr. A. Watt, much important data was comprehended. From these tables, which related to Glasgow, Edinburgh and Leith, Dundee, Aberdeen, and Perth, it appeared that the proportion of marriages to the entire population of those towns, within the five years ending in 1840, was as follows:—

Glasgow	1 in 120
Edinburgh and Leith	1 in 130
Aberdeen	1 in 140
Perth	1 in 159
Dundee	1 in 111

In the tables of the mortality of the same towns, a statement was given of the proportion of the inhabitants who die at various ages, the number of deaths each month, and many other details of a highly interesting character to all interested in vital statistics.

Dr. Alison called attention to one fact, which might be ascertained from a comparison of these tables with the returns published by the registrars-general. He alluded to the difference between the proportions of deaths from epidemic diseases (above 20) in Scotland, and the proportion of deaths from the same cause, among the same class of persons, in England. Of the total number of fatal fever-cases, in Glasgow and Edinburgh, 70 per cent occurred among persons above 20 years of age, which, he felt confident, was a much larger proportion than any town in England.

2. Mr. W. Hall read a statement relative to the differences which are found in the quality of the milk of cows; for, on reference to the making of butter and cheese, it appeared, he said, from a number of experiments which had been made with a view to ascertain the relative richness of the milk of different cows, that the variation was much greater than was commonly supposed. According to one series of experiments, it varied from 19oz. 6drs. to 6oz. 6drs. in a given quantity of milk.

3. Dr. Alison communicated his statements relative to the destitution and mortality of some of the large towns of Scotland, and defended some of his former data from the charge of being exaggerated. In Edinburgh, with a population of 137,000 inhabitants, there were actually 23,000 persons, or one in every six, in a state of utter destitution. Dr. Alison then gave a comparative view of the mortality in Scotland and England; and shewed, from the mortality-bills of Glasgow, and the population-returns for England, that the mortality in Glasgow was nearly 25 per cent greater than that of any town in England; the chief cause of which, he contended, was the greater amount of destitution in the large towns of Scotland. In conclusion, he made some remarks on the close connexion which he had frequently traced between destitution and crime in Scotland. He felt persuaded, that a large number of those cases which swelled the criminal returns of Scotland, would never have occurred but for the want of a proper system of poor-laws in that country. Since he had come to Manchester he had visited the workhouse in which the pauper children were brought up; and it appeared evident to him, that if such a system were established in Scotland as that which prevailed here, not one half of the crimes which fill the prisons of Scotland would ever be committed.

4. Mr. W. Langton read a digest of the report of the Manchester Statistical Society on the vital statistics of the town. It lies before us in the shape of a voluminous pamphlet, with many tables, maps, diagrams, &c.; and it may readily be supposed that we could not do justice to it even in a whole number of the *Gazette*. "The growth of the population since the first public census in 1801, in certain townships, compared with that in others, as also of that of the town as a whole, will be seen from the subjoined table:—

	1801.	1811.	1821.	1831.	1841.
Choriton-upon-Medlock	675	2581	8209	20,569	28,333
Hulme	1677	3081	4234	9624	26,982
Ardwick	1762	2763	3545	5524	9,903
Cheetham with Crumpsall	1204	1798	2937	5903	8,827
Broughton	866	825	880	1580	3,794
Salford	13,611	19,114	25,772	43,786	53,206
Pendleton	3611	4805	5948	8435	11,032
Manchester	70,409	79,459	108,016	142,026	163,856
					305,933

The report proceeded to give some interesting statements relative to the climatology of Manchester, from observations made by Dr. Dalton, as well as other details connected with the vital statistics of the place.

A long discussion ensued; and the Section terminated its useful labours.

SECTION G.

was very miscellaneous and desultory on its last day.

1. Sir John Robison, "Short Notice of a Process now in use at Stoke-on-Trent for making Tesselated Tiles and other objects by the Compression of Dry Powder of Clay."
2. Mr. Cadogan Williams, "On a new Mode of raising Water."
3. Mr. Russell, "On an Index of Speed for Steam-Vessels."
4. Mr. Vignoles, "On the application of Béton and Concrete to the Construction of Breakwaters, &c."
5. Mr. B. S. Shaw, "On a new Steam-Engine worked by three kinds of Pressure."
6. Mr. B. S. Shaw, "On a Hydraulic Engine."
7. Mr. Schwabe, "On producing Artificial Threads or Filaments for Weaving."
8. Mr. Vignoles, "On Clegg's dry Gas-Meter."
9. Mr. Thomson, "Notice on Wigston's Self-acting Railway-Signals."
10. Mr. C. W. Williams, "On testing the Efficacy of Plans for abating the Smoke-Nuisance."

1. Sir J. Robison stated, that the advantages of the invention were the perfect truth of the tiles. When formed of wet clay, they almost invariably warped and became crooked. In this invention, a mould was filled with the dry powdered clay, which was subjected to heavy pressure, which caused it to cohere sufficiently to bear being placed in the kiln, where it was burned in the usual manner. Some specimens of tesselated tiles, and also of roofing-tiles of a new construction, much lighter than ordinary tiles, and by which the capillary action of water under the edges of the tiles was prevented, were exhibited. The tiles were exceedingly accurate in point of form, and appeared extremely well adapted for the purposes for which they were intended.

3. Mr. Scott Russell's index for the speed of steam-vessels was founded on the well-known dynamical fact, that if an aperture were made in the lower part of a vessel containing water, and a stream were allowed to issue from it against an aperture in another vessel containing water, the force of the current would keep the water in the second vessel at the same height as in the vessel from which the current issued. It would follow from this principle, that, if a vessel were passing through the water at a speed equivalent to that of the current produced by a given head of water, the resistance would raise water in a tube inside the vessel, but subjected to the action of the external fluid. Mr. Russell then proceeded to detail the particulars of the invention to which he had applied this principle, by passing a tube through the bow of the vessel, and carrying it along the flooring to the centre of gravity of the vessel, where it terminated in a vertical glass tube, exhibiting the weight of water within. To this tube there was attached a moveable scale, the zero of which being placed on a level with the point at which the water stood when the vessel was at rest, the rise of the water in the tube when the vessel was set in motion exhibited the velocity at which the vessel was passing through the water. With the view of testing the accuracy of this invention, he had tried it repeatedly over a distance of fifteen miles, measured trigonometrically. He had also compared it with the best logs, and was perfectly satisfied of its accuracy. From these experiments he had constructed a scale, which he exhibited, and of which the following is a copy; the first column exhibiting the speed in miles per hour, and the second the height of the water in the tube above the zero-line, expressed in feet and decimal parts:—

Miles per hour.	Feet on scale.	Miles per hour.	Feet on scale.
15	7·5625	7	1·647
14	6·5880	6	1·21
13	5·6800	5	0·84
12	4·84	4	0·537
11	4·067	3	0·3025
10	3·36	2	0·134
9	2·722	1	0·0336
8	2·151		

4. Mr. Vignoles called the attention of the Section to the works now going on at Algiers, in the formation of breakwaters by the use of concrete, under the direction of M. Poirel; where, he said, a shelter had already been made for fifteen sail of the line, at an expense, even under all the difficulties presented by the circumstances of that country, of about 20*s.* per cubic yard; and he had no doubt that in this country, in any situation where a good

hydraulic lime could readily be procured, the expense would not exceed 10*s.* per cubic yard. Some very extensive works of the same kind had also been executed at Marseilles.

Mr. P. Taylor, of Marseilles, in confirmation of Mr. Vignoles, mentioned several instances in which concrete was used in that neighbourhood with the greatest success. He stated that *béton* was a material much used in that vicinity, though scarcely known in England. It was composed of one part of ground bricks, and two parts of lime.

Mr. Smith, Mr. Fairbairn, and several other gentlemen, expressed their opinions as to the value of this concrete, and its applicability to a variety of purposes to which it was not commonly applied.

7. Mr. Lewis Schwabe made a short communication on the formation of artificial threads of glass, for the manufacture of ornamental damasks, some very beautiful samples of which he exhibited to the Section. Mr. Schwabe stated, that he had tried various kinds of glass, and found that that which was best adapted to the purpose was common window-glass; the samples before the meeting having been made from the broken windows of his own establishment. There was one peculiarity in the matter which was worthy of remark, that the minute fibres of glass drawn from the lamp were always of the same shape as the bar of glass from which they were drawn. If that was round, the thread was round; if square or flat, the form of the thread varied accordingly; and, as a flat thread reflected the light better, and consequently appeared more lustrous than a round one, the best form was a narrow flat slip, such as window-glass readily produced. Mr. Schwabe shewed the apparatus used, and the process adopted in spinning the exceedingly minute threads, of which from one to two hundred were used to form a single shoot of the weft. He also shewed the mode in which the weaving was performed, which was extremely simple.

10. Mr. Williams made a communication on the subject of the mode of testing the efficacy of plans for the combustion of smoke; but we have nothing to add on this much-debated question. The Section concluded with the customary thanks, &c.

Tuesday evening.—This evening Mr. Murchison gave a lecture on the geology of Russia, superbly illustrated by diagrams running nearly round the fine theatre of the Athenæum: but as we have gone over the same grounds with him in the Geological Society of London, we need only notice the kindness with which the able president undertook this exposition for another audience, after all the heavy business of the week upon his mind, both as one of the secretaries of the British Association and the chairman of the Geological Section.

A general *soirée*, with a concert by the Manchester Choral Society, finished the night in excellent style. The performances of the Lancashire singers were admirable. We never heard superior *time-ists*, either in the highest concerts of London, or in the best-regulated bands or orchestras abroad, where the utmost attention is lavished on perfection in musical execution.

SECTIONS.—WEDNESDAY.

SECTION A.

1. Sir W. Hamilton, "On Fluctuating Functions."
2. Mr. Hopkins, "On the Meteorology of the Northern Atlantic and South-west Monsoon of India and the places adjacent, with a Sketch of a Meteorological Chart."
3. Sir D. Brewster, "On Crystalline Reflection."
4. Sir D. Brewster, "On the Geometric Forms and Laws of Illumination of the Spaces which receive the Solar Rays transmitted through Quadrangular Apertures."
5. Professor Nichol, "Report of the State of the Observatory of Glasgow."
6. Mr. Prichard, "Account of a daily Meteorological Journal of Observation registered at Biddgalert, near Snowdon, North Wales," (communicated by Mr. Hopkins)

The above is the journal of sectional proceedings for Wednesday: no other Section met. The order of reading was not strictly observed; and papers and communications were introduced that are not contained in the above list.

Mr. Holden exhibited a simple method of arriving at the decimal part of the sine or tangent below a second of a degree to the 10,000th or 1,000,000th part of it.

Sir David Brewster then, in bringing forward his communication (No. 3), said, that it was a mere notice connected with the undulatory theory of light. Prof. Kelland in conversation had directed Sir D. B.'s attention to Prof. M'Cullagh's interesting memoir on the laws of crystalline reflection and refraction, and especially to the following note relative to results of observations laid before the Bristol meeting by Sir D. Brewster.

The note by Prof. M'Cullagh says:—"I was at this time in doubt whether the phenomena observed with oil of cassia could be reconciled to that theory; and when the note in page 36 was written, I was almost certain that they could not. But I have since, I think, found out the cause of this perplexity: some of Sir David Brewster's experiments were made with natural surfaces of Iceland spar, others with surfaces artificially polished. I believe (though I have made very few calculations relative to the point) that the former class of experiments will be perfectly explained by the theory; the latter I am certain cannot, nor ought we to expect that they should; for the process of artificially polishing must necessarily occasion small irregularities by exposing little elementary rhombs with their faces inclined to the general surface, and the action of these faces may produce the unsymmetrical effects which Sir David Brewster notices as so extraordinary. If this does not account for such effects, I do not know what will."

Sir D. B. proceeded to say, that "had Mr. M'Cullagh communicated to me this explanation of the incapacity of the undulatory theory to account for the extraordinary unsymmetrical phenomena which I described to the British Association, and which exist to a much greater extent than I described; or had it been contained in the two abstracts of his memoir with which I was familiar, I could at once have removed the difficulty referred to in the preceding note. The view he has taken of the action of an unpolished surface of Iceland spar is a mistaken one. The exposure of elementary rhombs with faces oblique to the general surface, would shew themselves in separate ways inclined to the principal pencil, especially in solar light. It could not for an instant be overlooked by an experienced observer. Such faces I can produce at pleasure, by a slight chemical action upon the surface, whether polished by crystallisation or by art; and it is impossible to confound the pencil which they reflect with that which is given by the general surface. It is useless, however, to pursue this argument any farther, because I have obtained exactly the same results in using natural faces and in using artificial ones, and especially on planes perpendicular to the axis of the crystal, where I have found the same results with those produced by artificial grinding. In this case the coincidence is still more remarkable, as the very friction of the finger is capable of developing on this surface the faces of elementary rhombs; but the reflexions from these never disturb in the slightest degree the physical action of the general surface. I have no doubt that Prof. M'Cullagh will concur in the accuracy of these views, and, with that candour which distinguishes him, will acknowledge, as he has almost done already in the preceding note, that the undulatory theory is, generally speaking, incapable of explaining the phenomena of crystalline reflexion. Involved in the same perplexity with Mr. M'Cullagh, in regard to the singular phenomena of crystalline reflexions, it has occurred to me, that the peculiar laminar structure of Iceland spar, in relation to the axis of the crystal, may modify the action of the faces which are concerned in the phenomena under consideration. We have not only laminæ of easy separation on the faces of the rhomb, but we have laminæ of difficult separation, which I discovered many years ago, on its six edges. Now, as the reflected light at the surface of the oil and the spar does penetrate within the limits of the doubly refracting forces, it may undergo a polarising action from laminæ, which, though they are all in optical contact, may yet modify the light which partially penetrates them; or, to use the language of the undulatory theory, the state of the ether may be so modified by the laminated structure, as to produce the unsymmetrical phenomena which exist in crystalline reflexions. Chemical action on the surface of Iceland spar developes most extraordinary faces, which indicate a species of structure of which we can have no conception. All these faces are produced by reflexion, developed by chemical agency; and, being so developed, the agent must have acted on some places with more power than on others; and this may have produced the unsymmetrical phenomena which Prof. M'Cullagh has stated."

Prof. M'Cullagh said, he thought those observations of Sir D. Brewster very important, and considered the undulatory theory unable to grasp more than the grossest phenomena of light. The theory of crystalline reflexion laid down comprehended all the phenomena. He (Mr. M'Cullagh) had observed, that when the reflexion took place in the air, on the surface of the crystal, whose refractive powers was not equal, the results were not satisfactory; but when a fluid nearly equal in refractive powers was employed, then we got at the residual phenomena which had been explained. There were questions in optics with which philosophers were unable to deal. Indeed, their theories were far from having any mathematical precision in them.

Sir W. Hamilton: I ventured to express a wish, some years ago, that Sir D. Brewster would publish those important experiments which he has made on this subject.

Sir D. Brewster: My reason for not publishing any thing on the subject is, that I have not arrived at any thing like an approximation to a law. I have only made a mere collection of disintegrated facts.

The president hoped Sir D. Brewster would put the public in possession of his experiments; for, whether the undulatory theory was capable of explaining them or not, they might enable mathematicians to grapple with the phenomena.

The remarkable facts discovered by Prof. Möser of Königsberg connected with photography, and communicated by Prof. Bessel, through Sir D. Brewster, to the Section, we have already in part laid before our readers (see *Lit. Gaz.* No. 1328, p. 463). Other extraordinary phenomena were stated to have been

discovered by Prof. Möser. Before, however, following the discussion, we direct attention to the Paris Letter in our present number for the details of the Prof. of Königsberg's investigations. And because of this lucky coincidence, we confine our remarks here to the observations that led to a conversation which will doubtless be attended with great results. The thoughts of men most eminent in this branch of science were engaged and directed to new views in relation to the theory of light; and Sir W. Hamilton was induced to put forth his ideas, alluded to only in Tuesday's discussion, embracing a somewhat more metaphysical than the hitherto strict mathematical conception of the theory. This, however, and other ingenious and promising speculations we omit. The most important fact, in a scientific point of view, was a statement which Sir D. Brewster said Prof. Bessel had mentioned to him. It was, that Prof. Möser had discovered the existence of latent light—of light residing in bodies, and exhibiting its action after having lain in those bodies for we know not how many years. If it were an actual physical fact that latent light did exist,—if light took its residence permanently in a body,—if, having motion, it stood still, and did not shine,—if it did not trouble the ether in any way, was (Sir David asked) its motion extinguished? and, if so, how was it to be put in motion again? This idea of latent light corresponded with Newton's opinion, that light entered the surface of charcoal, and never was brought out again; but Möser had discovered a mode of bringing it out again.

Sir D. Brewster also mentioned a phenomenon analogous to charcoal absorbing light. If a tube were filled with nitrous acid gas, and rays of light passed through it by a lens, the fluid would almost lose its yellow colour, and become so white that every object might be seen through it; but if it were exposed to a higher temperature, it became gradually yellow, then orange, and at length it would become of such a deep red colour, that the light of the meridian sun could not pass through it,—the gaseous body standing like a column of charcoal before the spectator. By allowing the gas to cool down, it gradually becomes transparent, passing backward through the same steps. The opacity arises from the heat; and, if there be such a thing as latent light, it must have acted on the particles of the gas.

On this latter subject, the action of heat on the colour of liquid bodies, we cannot but refer to Mr. T. Pollock's researches. Abstracts of them have from time to time been given in our columns, but they will be found at greater length in the Transactions of the London Electrical Society.

Sir J. Herschel, with reference to the discovery of latent light, and to the production of images on surfaces in the dark to be brought into view by vapours, and to the other facts elicited, said they were so extraordinary that they opened to us a vast ocean of discovery. After describing some of his own photographic experiments, whereby he had obtained some singular effects of appearance and disappearance, and still retention of the image, to appear again, he asked, May not the retina possess a similar power, be capable of so acting,—in short, may it not be an analogous photographic apparatus?

Sir D. Brewster caught readily at this idea, and thought that it would explain a vast number of facts.

At the conclusion of the important discussion, Sir David brought forward his communication (No. 4). He said his attention was called to this subject by an accidental discussion on the point, whether or not Aristotle, in explaining the circularity of images formed by quadrilateral apertures, employed the appropriate idea when he said, that those images were to a certain extent quadrilateral, but appeared circular from the eye being unable to recognise faint impressions of light. Prof. Whewell, in his *History of the Philosophy of the Inductive Sciences*, had distinctly stated, that Aristotle had not used the appropriate idea, and that the question was entirely a geometrical one, the appropriate idea being the rectilinear nature of light. Prof. Whewell had also stated, that by geometry the image of a quadrilateral aperture was a circle. Having been led accidentally to consider the subject, he (Sir D. Brewster) had determined in a simple manner the form of the aperture at all distances, and to take the same view of the subject with Aristotle, who seemed to have employed the appropriate idea. The sun's disc is a circle only in the zenith, and becomes by refraction more and more elliptical towards the horizon. The area occupied by the sun's rays transmitted through a quadrilateral aperture is bounded by four straight lines (each equal and parallel to the corresponding sides of the aperture), joined by eight similar curves, the distance of each point of which from the centre of the area is the third side of a triangle, two of whose sides, and the adjacent angle, are given. These curves are elliptical arcs, similar to the corresponding arcs of the elliptical disc of the sun, and have their centres in the four angular points of the quadrilateral image that would have been formed by the central point of the sun alone, and their major axes coincident with its diagonals. When the sun is in the zenith, these eight curves are reduced to four, and are arches of circles whose centres are in the same four angular points. When the ellipses or circles, to which the eight elliptical or the four circular arches belong, are completed, the central area which they enclose is the area of equal illumination, at all distances from the aperture beyond that at which the shortest side of the quadrilateral aperture is twice the tangent of the sun's vertical semidiameter. At that precise distance the area begins to be illuminated by the whole disc of the sun. The form of the space so illuminated is then a mathematical line, whose length is equal to the difference between the largest side of the aperture, and twice the tangent of the sun's horizontal semidiameter. At all shorter distances the form of the space in question is a quadrilateral figure similar to that of the aperture, but having its sides less than the corresponding sides of the aperture by twice the tangent of the sun's corresponding semidiameters. The intensity of the light at any point of the luminous area is proportional to that part of the area of a quadrilateral figure (having the given point for its centre, and its sides equal and parallel to those of the aperture) which is included within an ellipse similar and similarly situated to that of the sun's disc, whose centre is in the centre of the illuminated space, and whose radii are the tangents of the sun's variable semidiameter.

Sir W. Hamilton made a brief communication (No. 1) on a mode of expressing fluctuating or arbitrary functions by mathematical formulæ. The subject was illustrated by diagrams, and excited great attention among the eminent men present.

Prof. Jacobi said, that Lagrange stated it as his opinion, that it was not possible to express these functions by any mathematical formulæ. It appeared, however, to him (Prof. Jacobi), that Sir W. Hamilton had shewn that it was possible.

Sir D. Brewster exhibited a small vial with an alcoholic solution of stramonium, which he stated he had just received from Mr. Jerdan, and which presented the bi-colour phenomenon in a remarkable degree. Looking through the liquid it was of a bright sherry colour, and at it, a dirty green; the former by transmitted, the latter by reflected light.

Mr. Hopkins' paper (No. 2) tended to shew that the ordinary explanation of the trade-winds, and other great currents of the atmosphere, was not the correct one.

No. 6 was a report of progress; and No. 7 a tabular series of results.

Mr. Goodman exhibited two unguarded poles of platinum wire, 1-16th of an inch in length, with which he had effected decomposition of distilled water by the simple current of the machine alone. He stated that in no instance on record had aqueous decomposition been effected by the current alone, unless the guarded poles used by Dr. Wollaston were employed; and that decomposition by this latter method had been objected to as being identical with voltaic decomposition: no such objection could be raised to the identity of the phenomenon of the unguarded poles and of that of the battery. He also exhibited an apparatus by which he had developed electro-magnetism from the electrical machine. It consisted of a plate of glass supported upon insulated pillars. After a variety of experiments, Mr. Goodman stated, he found that the greatest possible weight that could be sustained was supported by a continuous current, by connecting the prime conductor of the machine to a slip of writing-paper on one-half the glass, the insulated negative conductors being in conducting communication with a similar portion of paper on the other half, at a slight distance from the former, and a narrow slip of the same material extending from the positive to the negative surface, formed a communication between them. Then, by placing underneath the glass an armature also of paper, which should embrace both the positive and the negative surfaces, a weight of 5 ounces and 20 grains was sustained. By this means, so long as the current is maintained, a fixed polarisation is given to the glass plate, which enables it to retain its sustaining power; and the paper armature also, when in contact with the glass, obtains a fixed electrical condition independent of all surrounding bodies. This experiment, Mr. Goodman believed, offered a fair representation of electro-magnetic action; and he was proceeding to shew why he saw no reason for seeking any other explanation of the magnetic phenomena than the laws of ordinary electrical attraction and repulsion, when he was prevented by the assembling of the General Committee. We have already reported their proceedings, with the exception of the details of the money-grants, which we omitted for want of space, and which we now subjoin.

Section A.	£	s.
No. 1. For another year's hourly meteorological observations at Plymouth	50	0
2. To Mr. S. Harris and others, to continue for one year the experiments with Whewell's anemometer at Plymouth	10	0
3. For another year's meteorological observations in Shetland	35	0
4. To publish the British Association Catalogue of Stars	550	0
5. For improvements in the anemometers at Edinburgh and Plymouth	15	0
6. For the continuance of hourly observations at Inverness	60	0

7. To observe the anomalous tides of the east of Scotland, and especially those of the Frith of Forth £120 0
8. The Committee reappointed for the revision of the nomenclature 32 0
(The former grant, of which none had been expended.)
9. To continue the reduction of meteorological observations 75 0
10. Committee reappointed for the translation and publication of foreign scientific transactions 50 0
11. Committee reappointed for conducting the magnetic and meteorological co-operation . 89 11
12. Committee reappointed to complete the Astronomical Society's Catalogue 25 0
13. For discussing the observations made by Osler's anemometer at Plymouth 20 0
14. To the Treasurer, to advance to Professor Forbes for the purchase of instruments . . . 40 0
15. For Prof. Wheatstone's proposed self-recording meteorological apparatus for the Association Observatory at Kew 50 0
16. The Committee reappointed to make experiments on the atmosphere by means of captive balloons 250 0
17. To uphold the establishment at Kew . 200 0
18. For experiments on the action of different gases on the spectrum 40 0
Total for this Section, £1711 11*s.*

SECTION B.

1. For a series of observations on respiration and digestion 60 0
2. For experiments on the blasts of furnaces, hot and cold, with a view to economise fuel, and carry on experiments for extracting the gases from iron 50 0
3. Chemical history of substances belonging to the Tanin family 10 0
4. For experiments on the origin and history of colouring matter used in the arts 10 0
5. Researches on the oxidation of railways in use and out of use, also loss by abrasion . . . 20 0
Total, £150.

SECTION C.

1. For farther illustration and completing publication of Prof. Owen's report on fossil reptiles 40 0
2. The Committee reappointed to make coloured drawings of railway-cuttings 200 0
3. For registering shocks of earthquakes and concomitant meteorological observations . . 100 0
4. To Mr. Binney towards the expense of uncovering lower red sandstone near Manchester 10 0
5. Experiments on the temperature of mines 10 0
Total, £360.

SECTION D.

1. Report on zoological nomenclature . . . 10 0
2. Committee reappointed for experiments on the vitality of seeds 16 14
3. Generation and reproduction of marine testacea 10 0
4. Committee for experiments on the preservation of animal and vegetable subjects: former grant renewed 6 0
5. For preparing Prof. Owen's report (see our No. 1329) on fossil mammalia 100 0
6. Committee for the illustration of species of animals undescribed 25 0
7. For report on the radiata and mollusca of the Ægean and Red Seas 100 0
8. The Dredging Committee for researches on marine animals, &c. 50 0
9. For printing a second edition of the tabulated inquiries regarding the varieties of the human race 5 0
Total, £322 14*s.*

SECTION E.

1. Researches on asphyxia 40 0
2. Committee to inquire into the operations of medicinal agents 40 0
Total, £80.

SECTION F.

One grant for prosecuting the inquiries into vital statistics 150 0

SECTION G.

1. To complete experiments on the forms of ships 100 0
2. For the reduction of 20,000 observations on the form of ships 100 0
3. To procure Mori's instrument for measuring velocity, and to complete the trial of Prof. Moseley's indicator 100 0
4. For experiments on the strength of materials: continued 100 0
5. To ascertain whether any and what internal changes occur in metals by vibration or concussion 150 0
6. Committee on Dr. Bunsen's apparatus for the Gas Committee 15 0
Total, £565.

The total grants for all the Sections, £3338.

Captain Sleigh's theory of the superficial action of the waves at sea was brought forward by that gentleman in the Mechanical Section on Saturday, though incidentally omitted in our report; as we had at the time an idea of engraving the diagram with which it was supported, and without which it can be but imperfectly understood. The purpose is, to shew the manner in which the pressure and friction of the wind acts upon the surface of the sea, in producing waves by ruffling or rolling up the minute globules of which water is composed; and at the same time to exhibit the oblique refraction of the wind from off the superior side of the billows, to exemplify the fact of there being little or no undulation beneath the lower curve or trough of the sea. Upon the data and principles here enunciated, Capt. Sleigh has recently taken out a patent for a buoyant sheltering sea-barrier, or breakwater, by means of which floating harbours may be formed for the safety and protection of shipping on any coast, however much exposed. It is out of our power, through language, to render this very important subject comprehensible; but to the vast Interests, national and mercantile, which it so materially affects, we would earnestly recommend Capt. Sleigh's "Illustrated Description," published by Simpson and Gillett of Manchester.

On Wednesday evening the final general meeting took place; the Dean of Manchester presiding. Many complimentary speeches were made in moving thanks to various parties who had contributed to the success and *éclat* of the session. Perhaps (as we have already noticed) there was something too much of panegyric here; but it is difficult to draw the line, where obligations are really felt, and it is wished that gratitude should be expressed.

PARIS LETTER.

Paris, July 23, 1842.

Academy of Sciences: sitting of July 18.—*Photography.*—M. Regnault read extracts of a letter from M. de Humboldt, containing the announcement of several new results obtained in photography by M. Möser of Königsberg. The most remarkable is the successive formation of a *direct* or *positive* image, having the lights and shades as in the object itself; and of an *inverted* or *negative* image, with the shadows in nature replaced by light parts and *vice versa*. If an iodised plate be placed in the camera, a *negative* image will be obtained, and visible without being submitted to the vapour of mercury. But to produce this effect it is necessary that the plate should remain in the camera for a certain time. M. Edm. Becquerel has shewn that this time may be shortened extremely, provided that the action be continued by the interposition of a red glass and exposure to light direct or diffused. According to M. Gaudin, yellow glass is still more effective.

M. Möser has determined that the action does not stop there: he put an iodised plate into the camera, and kept it there long enough to get an image by means of the mercury; then placing the plate under a yellow glass, in the sun, he saw a *negative* image rapidly forming, which disappeared, and was replaced in about ten or fifteen minutes by a *positive* image. Green glass produces the same change; but red not, however prolonged the exposure may be.

From this M. Möser thinks that the blue and violet rays only act on a virgin iodised plate. The change has two degrees: in the first, the *red* and *orange* rays continue the action commenced, but the *yellow* do not yet possess this property;—in the second, when the action begun by the blue and violet is rendered appreciable by the vapour of mercury, the *yellow* and *green* act as completely as the red.

If the exposure of the plate in the camera opposed to an object in sunshine be continued for more than an hour, a very distinct *negative* image will be formed: this plate submitted to the sun's direct radiation, loses its *negative* image, which is replaced in a few minutes by a *positive* image: in this the light parts are greenish, and the shadows a deep red brown.

M. Möser has compared, one simply iodised, the other prepared with chlorure of iodine; these plates had remained, in the winter, exposed in the camera for *thirteen days:* both presented a *positive* image; the chloro-iodised was the most vivid; the light parts had a beautiful sky-blue tint, and the shadows were of a fiery red colour. In the hyposulphite solution the image was instantly effaced, and was replaced by a negative image.

M. Möser tried also polarised light, but found no difference in the results. A prism of carbonate of lime achromatised for one of the two orders of rays placed before the object-glass of the camera, gave two images, one of which only was achromatic to the eye.

Finally, coloured rings, designed on stained glass, have been reproduced.

M. Möser has made other very curious observations. It is well known that characters traced on glass with soapy substances may be reproduced with the breath; according to the researches of the Königsberg professor, this effect is seen on every kind of polished surface; even mercury, kept in a quiet place, preserves for several days the power of exhibiting these traces when breathed on.

The apposition of a carved screen leaves a sufficient trace for the breath to render it visible. Likewise medals engraved in metal, in agate, horny substances, &c., placed during the night on an iodised plate, will be reproduced in all their most delicate details when the plate is exposed to the mercury-vapour.

Farther, a plate of new silver, well polished, exposed to the sun under a carved screen which does not touch it, has given, with the mercury, a very clear image of the carving.

The same experiment was successful with a plate of copper and with glass—sometimes the breath made the image appear, sometimes it was treated with the vapour of iodine.

Finally, two bodies, sufficiently near, impress their image one on the other; and this at night, and in the dark.

In one of the experiments an engraved agate was employed; it had been half exposed to the sun, the other half having been carefully covered: there was no difference, however, in the image produced. Ten minutes' action is sufficient to render these images visible.

M. Bourgery finished the reading of his paper on the structure of the lungs.

M. Rayer commenced a memoir on tuberculous affection in animals of all classes.

M. Poncelet presented, in the name of M. Wertheim, a memoir on the elasticity and cohesion of metals.

M. W. Meister forwarded a memoir on optics, which was referred for the report of MM. Regnault and Babinet.

M. Lance described a meteor which he had seen on the 11th July, at 9h. 10m. in the evening, at Passy. The blazing meteor appeared suspended about two or three degrees above the horizon, in the direction W.N.W.: after three or four minutes this meteor, which was

almost stationary and very luminous, lost its conical form with the base uppermost: the lower extremity melted off, became circular, and soon re-annexed itself to the principal mass. Finally the burning matter spread out, grew pale, came together again and took the form of a beautiful crescent, a little less brilliant, but five or six times larger than the moon in her first quarter. This crescent was visible for about two minutes, when it descended gradually and disappeared.

M. Babinet remarked, that if the crescent indicated that the meteor was luminous like the moon only in the half of its surface, the fact was curious, and shewed the want of rotation in the meteor. A round body, half luminous, seen obliquely presents a crescent more or less sharp according as the eye may be the more nearly opposite the dark part of the body, as the moon when new.

LITERARY AND LEARNED.

A NATIONAL MUSEUM.

In the House of Commons on Monday evening Mr. Wyse gave notice of a motion for next session of parliament, to which we most earnestly wish the *utmost* success. It is to pray her Majesty to direct the establishment, under efficient management and control, and on a scale commensurate with the dignity of the country, of a National Museum for the reception and preservation of objects connected with the History and Antiquities of the British Islands. Would H. R. H. Prince Albert, who has shewn so ardent and so instructed a desire to encourage and promote the fine arts and literature of the land of his adoption, allow himself to be placed at the head of such an institution, it would within a very brief compass of time be a rich treasure and honour to the Nation. Thousands of interesting specimens of British, Celtic, Roman, Danish, and other antiquities would be contributed from private possessions and collections. The Society of Antiquaries might find a proper place for the reception of many curious matters now buried in its narrow and confused repositories. All similar things hereafter recovered from the bowels of the earth or ancient buildings would at once be taken to their fitting home, and be preserved for ever. Even from foreign parts we might expect the return of objects belonging to our isle in days of old; and, in short, we should have a National Museum worthy of the Prince and the People.

FINE ARTS.

THE ROYAL COMMISSION.

The time for sending in the finished cartoons for the Houses of Parliament has been extended by the royal commissioners, with Prince Albert at their head, from the first week in May to the first week in June 1843.

Foreigners practising the arts, who have resided ten years in England, are to be eligible as competitors, and considered as British subjects. No frames to the cartoons are to be admitted; and Mr. Eastlake, the secretary, is empowered to give such farther explanations as may be required relative to the terms of the above and former notices issued by order of the commissioners.

NEW PUBLICATIONS.

Sketches for Rustic Work, including Bridges, Park and Garden-Buildings, Seats and Furniture. By T. J. Ricauti. London, J. Carpenter.

An appropriate companion for the author's work on *Rustic Architecture*, containing many sweet designs for cottages, fishing-houses, winter-houses for plants, tables, chairs, bridges, &c. The value is much enhanced by the descriptive letter-press, and the estimated cost of each design. The plates are neatly executed in zincography; and really, for example and instruction in all the matters of which they treat, these *Sketches* will be found most deserving of consultation.

The Cities and Towns of Scotland illustrated. Part III. Glasgow, Montrose. By J. and D. Nichol. Glasgow, Finlay; Edin., Oliver and Boyd; London, Longman and Co., and Tilt and Bogue.

Equal in merit to its predecessors, this third Part of our Scottish Towns demands our renewed praise. There are sixteen designs of the most prominent features in the city of Glasgow, including an admirable plan of the town—the whole drawn and lithographed by the Messrs. Nichol, to whose taste in selecting and skill in executing every praise is due. There are many far away from their native places to whom such faithful records of their homes must prove of endearing interest; and this feeling will give Messrs. Nichols' work more than a local interest: indeed, it deserves the patronage of all admirers of the lithographic art.

THE DRAMA.

As there has not been any novelty in our more immediate theatres during the week, we have taken a run to Sadler's Wells to see the horsemanship; and greatly were we amused. One arrangement deserves especial notice for its simplicity and excellence: instead of the circus being in the middle of the pit, the stage, by a simple mechanical arrangement, is entirely removed, and leaves an arena directly in front of the audience: this is much superior to the old plan, and, we think, might be adopted with advantage in the new Astley's Amphitheatre. *The Prophet of the Caucasus, Scenes in the Circle, and Valentine and Orson*, furnish a pleasant evening's amusement. Before we close, we may mention an act of liberality on the part of Mr. Greenwood, the manager, who has announced a morning performance for Thursday next, the entire proceeds of which he devotes to the fund for the relief of the distressed manufacturers. It is an example worthy of imitation, and we trust he will not go unrewarded for his generosity.

Batty's Circus is at White Conduit House, but not doing so well as was anticipated: this, with the Grecian Saloon at the Eagle, affords the north-Londoners plenty of amusement.

VARIETIES.

H. B.'s.—The last three of the politico-pictorial squibs represent Sir R. Peel as M'Adam, hammering away at a heap of stones, inscribed Toryism, Whigism, Chartism, Radicalism; and a pretty job he looks likely to have before he lays a good foundation of these heterogeneous materials. In the next, the Premier is the Cad of a "Bribery Van," driven by Roebuck, and very like the criminal conveyance from the police-offices. The last is a whole-length, and a good likeness, of that excellent philanthropist, Lord Ashley.

Caricature.—From Fores', Piccadilly, we have a single example of the same class, without an artist's name. It represents "light Sovereigns" in a scale tilted up by the heavier weight of Queen Victoria in the opposite.

Crosby-Hall Literary and Scientific Institution.—Crosby-Hall, restored with much taste and judgment, under the superintendence of Mr. Davis, was opened on Wednesday last under the above title; when a large assemblage of members met together to hear an introductory address. Prof. Bell was the chairman of the evening, and delivered a short but interesting history of the uses and abuses of Crosby-Hall; he also stated that the institution already numbered above four hundred members, which were daily increasing; that the library contained upwards of two thousand volumes; and that arrangements were in progress for a series of lectures on literature, science, and art. A very pleasant evening terminated with a look through the rooms; where were many pictures, objects of natural history and philosophy, &c. &c., lent by the friends of the institution for the occasion.

Herr Dobler's Entertainments at the St. James's Theatre were concluded on Monday with a grand distribution of bouquets. They have been very successful.

The Niger Expedition.—The Wilberforce and Soudan, under the command of Capt. William Allen, have arrived off the mouth of the Niger; but, owing to the low water, had not, when the accounts came away, ascended the river. As the rainy season had terminated, the vessels would immediately proceed for the model-farm, as we stated some time ago: further operations depending upon the healths of the crews, and other existing circumstances.

Mr. Melmon, the naturalist sent by the French government to Cayenne, has just returned to France with a large and beautiful collection of rare plants for the Jardin des Plantes. He has also brought over some large borded snakes, and an amphibious animal called the *Cabiai*, never before known in France, which will likewise be deposited in the National Museum.—*Medical Gazette.*

Lycian Travels.—A number of ancient Lycian cities, or rather their sites and ruins, have recently been visited by a party of three British travellers, including Mr. E. Forbes the naturalist, of dredging celebrity, and the Rev. Mr. E. T. Daniell.

Sir W. Woods, garter king at arms, and highly distinguished for his knowledge in heraldry, died on the 25th, at his residence near Hampstead. He was only 56 years of age, and a man highly and justly esteemed.

M. Brönsted, the celebrated Danish archæologist, died suddenly at Copenhagen a fortnight ago. He has left a rich collection of antiquities and a large library.

LITERARY NOVELTIES.

The *United States Literary Advertiser* mentions the immediate return of Messrs. Stephens and Catherwood from Guatemala; and the consequent publication of farther discoveries among the antiquities of the New World, as a sequel to the popular volumes already published.

A new work by Cooper, entitled "Le Few-Follet, or Wing-and-Wing; a Nautical Tale," is nearly completed, and will soon be put to press. The scene of the narrative is the Mediterranean—the time 1799.—*U. S. Lit. Advertiser.*

LIST OF NEW BOOKS.

Forest-Life, by the Author of "A New Home," 2 vols. 12mo, 12*s.*—A Complete Guide to the Lakes, with Mr. Wordsworth's Description of the Lakes, &c., edited by Hudson and Nicholson, fcp. 5*s.*—The Elements of Arithmetic, expressly designed for the Use of Schools, by C. Bathurst, M.A., 12mo, 3*s.*—Key to ditto, 18mo, 2*s.* 6*d.*—Gramina Britannica; or, Representations of the British Grasses, by J. L. Knapp, Esq., F L.S. and A.S., 2d edit. 4to, 3*l.* 16*s.*—Biographical Dictionary of Eminent Welshmen, by the Rev. R. Williams, M.A., Part I. 8vo, 1*s.*—The Biographical Dictionary of the Society for the Diffusion of Useful Knowledge, Vol. I. Part 2, 8vo, 4*s.*—Pounds, Shillings, and Pence; or, a Series of Money-

Calculations, by T. Martin, 12mo, 3s.—A Treatise on Engineering Field-Work, by P. Bruff, Part II. Levelling, 8vo, 6s. 6d.—Madame D'Arblay's Diary and Letters, Vol. IV. post 8vo, 10s. 6d.—The Life of a Sportsman, by Nimrod, with 36 Coloured Illustrations, by H. Alken, roy. 8vo, 2l. 2s.—The Office for the Visitation of the Sick, with Notes from Bp. Sparrow, &c., 32mo, 1s. 6d.—Ivo and Verena; or, the Snowdrop, 18mo, 2s. cloth.—English Notes for Latin Elegiacs; with Prefatory Rules, by the Rev. W. Oxenham, 12mo, 4s.—The Unity of the Church, by the Rev. H. E. Manning, M.A., Archdeacon of Chichester, 8vo, 10s. 6d.—Westminster Abbey; its Art, Architecture, and Associations: a Hand-Book for Visitors, by P. Cunningham, 18mo, 2s. 6d.—An Historical Outline of the Book of Psalms, by the late J. M. Good, M.D., F.R.S., edited by the Rev. J. M. Neale, 8vo, 10s. 6d.—Journal of a Visitation to the Provinces of Travancore and Tinnevelly, 1840-41, by the Bishop of Madras, 12mo, 5s. 6d.—A Few Arguments against Phrenology, by A. R. Smith, 18mo, 1s.—The Expedition into Affghanistan: Notes and Sketches descriptive of the Country, by J. Atkinson, Esq., Surgeon, post 8vo, 10s. 6d.—The Shepherd's Evening Tales, Part I. Ethelwolf, 8vo, 3s.—The Recreations of Christopher North, Vol. II. post 8vo, 10s. 6d.—Blackwood's Standard Novels, Vol. IX. Pen Owen, fcp. 6s.—Ranke's History of the Popes of Rome, translated by W. K. Kelly, Esq., Part I. 8vo, 4s. sewed.—Sciography; or, Examples of Shadows, with Rules for their Projection, by J. Gwilt, F.S.A., new edit. 8vo, 10s. 6d.—Massaniello; an Historical Romance, edited by Horace Smith, Esq., 3 vols. post 8vo, 1l. 11s. 6d.—Sowerby's Conchological Manual, 2d edit. considerably enlarged and improved, 8vo, 25s.—Tiark's Introductory Grammar of the German Language, 2d edit. 12mo, 3s. 6d.—Torrents of Portugal; an English Metrical Romance, from a MS. of the 15th Century, edited by J. O. Halliwell; Esq., post 8vo, 5s.—The Autobiography of Joseph Lister, of Bradford, in Yorkshire, edited by T. Wright, Esq., F.S.A., 8vo, 4s.—Principalities and Powers in Heavenly Places, by Charlotte Elizabeth, fcp. 5s.—Holy Scriptures the Ultimate Rule of Faith to a Christian Man, by the Rev. W. Fitzgerald, B.A. fcp. 4s. 6d.—The West-India Manual, sq. 4s. 6d.—Pindari Carmina, ad fidem textus Böckhiani, Pars I., edidit G. G. Cookesley, 8vo, 7s. 6d.

METEOROLOGICAL JOURNAL, 1842.

July.	Thermometer.	Barometer.
Thursday ... 21	From 46 to 61	29·69 .. 29·78
Friday 22	,, 46 .. 61	29·90 .. 30·05
Saturday 23	,, 52 .. 66	30·12 .. 30·14
Sunday 24	,, 42 .. 73	30·06 .. 29·96
Monday 25	,, 53 .. 69	29·90 .. 29·89
Tuesday 26	,, 46 .. 68	29·91 .. 30·05
Wednesday .. 27	,, 49 .. 64	30·13 .. 30·10

Wind N.W. on the 21st and 22d; N.E. and N. on the 23d; S.W. and N.E. on the 24th; and N.E. on the three following days. Cloudy. with rain, on the morning of the 21st; generally clear from the 21st to the 26th; 27th, raining frequently, thunder and lightning in the evening. Rain fallen, ·42 of an inch.

Edmonton. CHARLES HENRY ADAMS.

TO CORRESPONDENTS.

☞ This No. of the *Gazette* concludes our report of the proceedings of the British Association (including the practical *viva voce* discussion of matters of general public interest); and thus the entire mass of information elicited in this scientific congress will be found in our Monthly Part for July, now published.

To J. I••••p. The *tulips* are perfect.

In consequence of our report in the last No. of the *Lit. Gaz.* of a paper communicated to the British Association by Dr. Laycock, "On a general law of vital periodicity," we have received a letter from Dr. Dickson complaining that there is no mention made of his name as the originator of the doctrine. Surely, the learned and argumentative Doctor will feel that had we even known of his being the originator of the doctrine, that was not the place to notice it; our report was simply that of a memoir communicated to the British Association, and which contained in brief the statements of the author. As to what concerns ourselves, the history of all that has preceded the delivery of communications to the Association is quite beyond our reach—beyond the reach of one hundred folio Volumes—so that there can be no more injustice done to Dr. Dickson than to Hippocrates. Since the Doctor has, however, been polite enough to send with his letter a copy of his "Fallacies of the Faculty," we shall be truly happy to do him all the justice that our best feelings towards him (without any compromise of truth and justice) will enable us to do in a review of that work.

ERRATUM.—P. 510, middle col. In our notice of Mr. Cholmondely's clear illustration of the rates of corn, currency, and consols for the last fifty years, the word *Merch.* was by some error placed after the name instead of *inv.*, which might induce readers to suppose that Mr. C. was a *merchant*, instead of an independent gentleman, who has devoted so much attention to these important results.

ADVERTISEMENTS.

SALES BY AUCTION.

Shugborough Park, Staffordshire.—The superior Furniture, noble Glasses, Gallery of Pictures of the very highest class, Antique Marble Busts and Statues of inestimable price, extensive Library of rare and valuable Books, the Cellars full of choice Wines, and Oriental China.

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THE MAGNIFICENT GROUP OF CASTOR AND POLLUX, BY NOLLEKENS,

deserves especial notice; also the busts of Homer, Demosthenes, Marc Anthony, Shakespeare, and Locke, by Roubilliac; and those of Francis Duke of Bedford and Charles James Fox, by Nollekens.

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embraces several thousand volumes of the highest class of literature, and an infinity of works most beautifully illustrated, with many rare county histories and other works.

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The entire property will be on view during the week previous to the sale, and catalogues then had, at 5s. each, on the Premises; at Messrs. Keen and Hand's, Solicitors, and at the Stafford Arms, Stafford; the Advertiser Office, Birmingham; the Chronicle Office, Cheltenham; Royal Hotel, Manchester; Waterloo Hotel, Liverpool; of Edward White, Esq., Solicitor, Great Marlborough Street; of Messrs. Vizard and Leman, Lincoln's Inn Fields; at the Auction Mart; and at Mr. George Robins's Offices, Covent Garden.

N.B. Water-carriage by the Trent and Mersey Canal is close at hand, and the railway five miles only distant from the mansion.

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MESSRS. CHRISTIE and MANSON respectfully inform the Nobility, Connoisseurs, and Public, that on MONDAY, August 22d, and Four following Days, they will SELL by AUCTION, on the Premises, No. 1 Lower Crescent, Clifton,

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The precious CABINET of ITALIAN, FRENCH, FLEMISH, DUTCH, and ENGLISH PICTURES of the highest class, collected during nearly half a century, with the best taste and consummate judgment, by

DANIEL WADE ACRAMAN, ESQ.

from all the celebrated Collections which have been dispersed in this Country and on the Continent during that period. They comprise the "Ecce Homo," the charming *chef d'œuvre* of C. Dolce, from Casimir Perrier's, and the "Madonna," by the same Master, from Wardour Castle; the "Virgin and Child," and "St. John and Angels," by V. Dyck, from Robit's; the grand "Landscape," by Berghem, believed to be the finest in the world; the "Passage of the Tiber," by J. and A. Both; the celebrated "Wouvermans," from Lackeren; the "Judgment of Solomon," by Mieris; "Descent from the Cross," by Diebricy; the "Teniers," from the Duc de Valentinois; the "Metzu," from Baron Fogel, and Teniers' "Dentist;" besides these are many exquisite and equally important Specimens, most of which are so well known to every Connoisseur.

Among the English Pictures are capital works of West, Westall, Rippingille, Muller, and James Johnson; among the French, of Vernet and Le Nain. The magnificent assemblage of Works of Art and Taste, and decorative Furniture, much of which has been selected from Fonthill, consists of Marbles and Bronzes, rare Oriental Sevres and Dresden Porcelain, carvings in Ivory, Tables of rare Florentine Mosaic, Cabinets and Tables of the richest Boule and Marqueterie, and a few Books on Art.

The public view will commence on Thursday, the 19th of August. Catalogues may be had of Mr. Norton, Corn Street, Bristol; and at Messrs. Christie and Manson's Offices, King Street, St. James' Square, London.

MISCELLANEOUS.

CONCHOLOGY.—LOVELL REEVE begs respectfully to announce that his Cabinets exhibit a splendid assortment of Shells just at the present moment. The Genera are particularly rich in species; and the specimens which have been selected for the illustration of modern genera, include many of great rarity and beauty.

Conchologia Systematica. Part X. nearly ready for delivery, No. 8 King William Street, Strand (near Charing Cross).

N.B. Persons residing in the country may have Collections of Shells (all named) sent to any amount to select from.

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J. T. gives Private Instruction in MINERALOGY.

J. Tennant has just published Four Casts of Fossils described by Professor Owen in the last Report of the British Association, price 12s. 6d.; also Fourteen Models of Teeth and Bones of the Iguanodon, &c. described by Dr. Mantell in "Wonders of Geology," price 1l. 5s. 6d.; Geological Models in Wood, invented by T. Sopwith, Esq. F.G.S., to illustrate the nature of Stratification, Faults, Veins, &c. Sold in sets from 2l. to 5l. each.

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1. That the time therein specified for sending in the finished Cartoons, be extended from the first week in May to the first week in June, 1843.

2. That foreigners, practising the Arts, who may have resided ten years or upwards in Great Britain, be considered as coming under the denomination of "British Artists."

3. That no frames to the Cartoons offered for competition be admitted.

4. That the secretary of the Commission be empowered to give such further explanations as may be required relative to the terms of this and of the former public notice.

By command of the Commissioners,

C. L. EASTLAKE, Secretary.

Whitehall, July 22, 1842.

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22, Ludgate Street, July 20, 1842.

PERIODICALS FOR AUGUST.

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CONTENTS.

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